INDEX TO VOLUME 45

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How to Use This Index

This volume index is similar in form to the cumulative indexes of this JOURNAL, covering, respectively, Volumes 1–10, 11–20, 21–30, and 31–35, and it is composed of three main divisions:

1. **Author Index to Volume 45**
2. **Inventor Index to Acoustical Patents, Volume 45**
3. **Analytic Subject Index to Volume 45**

The Subject Index to Volume 45 of *The Journal of the Acoustical Society of America* lists the titles of all items as they have appeared in the JOURNAL. They are grouped under the 16 major section headings as listed in the **Classification of Subjects,** which follows immediately after these paragraphs. Each of these sections is subdivided into a considerable number of decimally numbered subjects. Each subject is further subdivided into 9 parts entitled, respectively,

1. **Papers**
2. **Letters to the Editor**
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6. **Patents**
7. **Book Reviews**
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Classification of Subjects • Effective 1 January 1965

This classification supersedes all previous ones; there have been major changes and additions.

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1969 IEEE Ultrasonics Symposium. **45**: 1580—1969

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Chavasse, Pierre, 1898–1968. **45:** 803—1969

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Announcement of forthcoming election. Wallace Waterfall. **45:** 244—1969
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Classification of subjects. 45: pages preceding page 1, 1596—1969
Information for contributors to *The Journal of the Acoustical Society of America*. 45: pages preceding page 1—1969

1.5 Meetings
Dates of future meetings of the Society. **45:** 253, 529, 802, 1066, 1292, 1581—1969
Light and sound conference. **45:** 1292—1969
Preliminary Notice: Seventy-seventh meeting of the Society, April 1969. Wallace Waterfall. **45:** 526—1969
Program of the Seventy-Sixth Meeting of the Acoustical Society of America, Cleveland, Ohio, 19–22 November 1968. **45:** 293—1969
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Rules for meeting papers. 45: 253, 529, 802—1969
76th Meeting, Cleveland, Ohio, 1968. Robert T. Beyer. **45:** 528—1969

1.6 Members and Membership Lists
Adams, Carl E., 1916–1968. John A. Dillon, Jr. **45:** 246—1969
Bauer, Benjamin B. elected President of the AES. **45:** 1063—1969
Dunn, Floyd appointed Associate Editor of the Journal. R. B. Lindsay. **45:** 1064—1969
Fisher, Frederick H. succeeds Theodore A. Litovitz as Associate Editor of the Journal. R. B. Lindsay. **45:** 1065—1969
Goodman, Ralph R. appointed to NRL post. **45:** 1063—1969
Gurin, H. M. retires. **45:** 1291—1969
Hiedemann, Egon A., 1900–1969. B. D. Cook. **45:** 1064—1969
Leonard, Robert Walton, 1910–1967. Isadore Rudnick. **45:** 246—1969
Neely, Keith Kent, 1922–1969. **45:** 1579—1969
New Fellows of the Acoustical Society of America. **45:** 795, 1063—1969
Pearson, Harry A. honored. **45:** 526—1969
Revisions to membership list. **45:** 253, 1293—1969
Stephens, R. W. B. wins Fellowship at University of Houston. **45:** 1579—1969
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Truell, Rohn, 1913–1968. **45:** 1342—1969
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1.7 Committee Activities
Technical Committees of the Society and their Chairmen. **45:** 252, 529, 802, 1066, 1292, 1581—1969

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New organization formed by Acoustical Materials Association and Insulation Board Institute. **45:** 524—1969

2.2 Auditorium Design. (See also 7.6.)

Papers
Audience and chair absorption in large halls. II. Leo L. Beranek. **45:** 13—1969

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Discussion on criteria used in association with model techniques, together with some practical examples. Vilhelm Lassen Jordan. **45:** 303—1969
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Model testing of auditoriums. Vern O. Knudsen. **45:** 302—1969

2.3 Studies of Existing Auditoria and Acoustic Enclosures

Abstracts
Oratorios and the Italian concert hall. R. S. Shankland. **45:** 297—1969

2.4 Sound Absorption: Theory and Methods of Measurement of. (See also 2.5.)

Papers
Audience and chair absorption in large halls. II. Leo L. Beranek. **45:** 13—1969
New acoustical test facilities of the National Gypsum Company. Theodore J. Schultz. **45:** 20—1969

Letters to the Editor

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Digital simulation of sound transmission in reverberant spaces. M. R. Schroeder. **45**: 303—1969

Scaling parameters for some normal incidence absorption measurements. Apparatus for measuring grazing incidence absorption. Ernest Colton **45**: 298—1969

2.5 Materials for Sound Absorption. Values of Absorption Coefficients and Acoustic Impedances

Letters to the Editor

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Patents

Method of making an acoustical tile and ceiling construction. John S. Podgurski. **45**: 1069—1969

2.7 Reverberation and Echoes. (See also 2.3, 2.4, 2.8, 2.9, 2.10, 11.2, 11.4, and 11.7) Normal Modes in Rooms. Diffusivity. Frequency Response. Subjective Effects

Papers

Statistical analysis of power injection and response in structures and rooms. R. H. Lyon **45**: 545—1969

Abstracts

Computer studies of the properties of sound fields in a reverberation chamber. G. C. Maling, Jr. **45**: 337—1969

Coupling of finite sized sources to a modal reverberant sound field. Kenneth Mck. Eldred, Ben H. Sharp, and Fancher M. Murray. **45**: 338—1969

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Patents

Intruder detection system. Lawrence S. Lerner. **45**: 531—1969

2.8 Reverberation-Measuring Instruments. (See also 2.7 and 5.15.)

Abstracts

Automatic data reduction with moving microphone. Richard J. Wells. **45**: 337—1969

2.9 Sound Transmission through Walls, Theory and Methods of Measurement of. (See also 2.10)

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Abstracts

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2.15 Computer Simulation of Acoustics in Rooms

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Letters to the Editor

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4.2 Anatomy and Physiology of the Ear

Letters to the Editor

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4.2.1 Middle-Ear Mechanics

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Papers

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Papers

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4.4 Deafness. (See also 5.5.)

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Papers

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4.7 Masking (see also 5.5.)

Papers

Amplitude discrimination in noise, pedestal experiments, and additivity of masking. G. Bruce Henning. **45:** 426—1969

Auditory detection and recognition under conditions of lateral, temporal, and composite uncertainty. G. Lowe and D. C. Earle. **45:** 1485—1969

Auditory temporal masking and the perception of order. J. L. Homick, L. F. Elfner, and G. G. Bothe. **45:** 712—1969

Binaural masking with sine-wave maskers. Frederic L. Wightman. **45:** 72—1969

Effect of duration on amplitude discrimination in noise. G. Bruce Henning and Joseph Psotka. **45:** 1008—1969

Effect of masking noise and pulse level upon jitter detection. Irwin Pollack. **45:** 1022—1969

Effects of pure-tone masking on low-pass- and high-pass-filtered noise. I. M. Young. **45:** 1206—1969

Lateralization and detection of a tonal signal in noise. Dennis McFadden. **45:** 1505—1969

Mach bands in hearing. Edward C. Carterette, Morton P. Friedman, and John D. Lovell. **45:** 986—1969

Noise masking of a change in residue pitch. Roy D. Patterson. **45:** 1520—1969

Perception of pitch in a white-noise mask. Alan M. Richards. **45:** 1180—1969

Perceptual masking in multiple sound backgrounds. Raymond Carhart, Tom W. Tillman, and Elizabeth S. Greetis. **45:** 694—1969

Receiver operating characteristics and psychometric functions determined under simple- and pedesta-detection conditions. Barry Leshowitz. **45:** 1474—1969

Release from multiple maskers: effects of interaural time disparities. Raymond Carhart, Tom W. Tillman, and Elizabeth S. Greetis. **45:** 411—1969

Letters to the Editor

Comments on "Monaural loudness functions under masking" [A. M. Richards, J. Acoust. Soc. Amer. **44**, 599—605 (1968)] Rhona P. Hellman. **45:** 1564—1969

Extension of some observations of Leshowitz and Raab. G. Bruce Henning and Joseph Psotka. **45:** 785—1969

Masking of tones before, during, and after brief silent periods in noise. Lois L. Elliott. **45:** 1277—1969

Abstracts

Amplitude discrimination in noise, pedestal experiments, and additivity of masking. G. Bruce Henning. **45:** 327—1969

Auditory neural response related to microphonic nonlinearity and peripheral activity of olivocochlear bundle. P. Nieder and I. Nieder. **45:** 311—1969

Backward masking and the perception of temporal order. Richard T. Tomsic, Lloyd F. Elfner, and Jerry L. Homick. **45:** 336—1969

Bandwidth estimates in human signal detection. Al Ahumada, Jr. and John Lovell. **45:** 327—1969

Effect of signal duration on pure-tone masking. Richard H. Ehmer and Barbara J. Ehmer. **45:** 336—1969

Effects of signal frequency on sequential aspects of signal detection performance. R. D. Sorkin and R. E. Pastore. **45:** 326—1969

Frequency discrimination in noise. Walter H. Jesteadt. **45:** 335—1969

Frequency-modulation masking. Norma Hopkinson. **45:** 336—1969

Lateralizability and detectability of a low-frequency tone as a function of signal-masker phase. Donald E. Robinson and William A. Yost. **45:** 336—1969

Lateralization and detection of a tonal signal in noise. Dennis McFadden. **45:** 327—1969

Masking level differences obtained with pulsed, tonal maskers. Ervin R. Hafter and Sam C. Carrier. **45:** 336—1969

Masking noise and jitter-detection thresholds. Irwin Pollack. **45:** 294—1969

Method for masking audiometry. Jerry V. Tobias. **45:** 343—1969

MLD's with narrow-band noise maske.s. Frederic L. Wightman. **45:** 335—1969

Monaural detection with contralateral cue (MDCC): interference between detection processes. M. M. Taylor. D. P. J. Clarke, and S. Smith. **45:** 327—1969

Noise masking of a change in residue pitch. Roy D. Patterson. **45:** 335—1969

On estimating noisiness of aircraft sounds. Robert W. Young and Arnold Peterson. **45:** 330—1969

Separating the effects of the acoustic reflex from remote masking. Walter J. Gunn. **45:** 335—1969

4.8 Phase Effects. (See also 4.3.)

Papers

Binaural masking with sine-wave maskers. Frederic L. Wightman. **45:** 72—1969

Dichotic summation of loudness. Bertram Scharf. **45:** 1193—1969

Envelope versus microstructure in the fusion of dichotic signals. Earl D. Schubert and Joel Wernick. **45:** 1505—1969

Lateralization and detection of a tonal signal in noise. Dennis McFadden. **45:** 1525—1969

Release from multiple maskers: effects of interaural time disparities. Raymond Carhart, Tom W. Tillman, and Elizabeth S. Greetis. **45:** 411—1969

Rôle of signal onset in sound localization. David R. Perrott. **45:** 436—1969

Letters to the Editor

Comments on "Historical Background of the Haas and/or Precedence Effect" [M. B. Gardner, J. Acoust. Soc. Amer. **43**, 1243–1248 (1968)]. P. H. Parkin. **45:** 513—1969

On estimating aural harmonics. Earl D. Schubert. **45:** 790—1969

Abstracts

Image fusion, broadening and displacement in sound localization. Mark B. Gardner. **45:** 328—1969

Lateralization and detection of a tonal signal in noise. Dennis McFadden. **45:** 327—1969

4.9 Pitch. Absolute Pitch

Papers

Frequency modulation and the difference limen for frequency. Lawrence L. Feth, Richard V. Wolf, and Robert C. Bilger. **45:** 1430—1969

Mach bands in hearing. Edward C. Carterette, Morton P. Friedman, and John D. Lovell. **45:** 986—1969

On the discrimination of frequency transitions. I. Nabelek and I. J. Hirsh. **45:** 1510—1969

Perception of pitch in a white-noise mask. Alan M. Richards. **45:** 1180—1969

Pitch of frequency-modulated sinusoids. Keener D. McClelland and John F. Brandt. **45:** 1489—1969

Temporal integration and periodicity pitch. Richard A. Campbell and S. Allen Counter. **45:** 691—1969

Letters to the Editor

Alteration of afferent, tone-evoked activity of neurons of the cochlear nucleus following acoustic stimulation of the contralateral ear. R. Klinke, G. Boerger, and J. Gruber. **45:** 788—1969

Note on "Comments on 'The use of noise bands to establish noise pitch'" [D. D. Greenwood, J. Acoust. Soc. Amer. **44**, 634–635(L) (1968)]. E. D. Schubert. **45:** 238—1969

Periodicity pitch for interrupted white noise—fact or artifact? Irwin Pollack. **45:** 237—1969

Technical Notes and Research Briefs

Submicrosecond auditory jitter discrimination thresholds. Irwin Pollack. **45:** 1058—1969

Abstracts

Automatic speaker recognition based on pitch contours. B. S. Atal. **45:** 309—1969

Frequency dependence in temporal integration. R. C. Bilger and R. M. Feldman. **45:** 293—1969

Frequency difference limen using frequency-modulated tones. Lawrence L. Feth and Richard V. Wolf. **45:** 293—1969

Frequency discrimination in noise. Walter H. Jesteadt. **45:** 335—1969

Fundamental frequency estimation by harmonic identification. T. B. Snow and G. W. Hughes. **45:** 316—1969

Noise masking of a change in residue pitch. Roy D. Patterson. **45:** 335—1969

Pitch of frequency-modulated signals. Keener D. McClelland and John F. Brandt. **45:** 293—1969

Pitch of short tone bursts of changing frequency. I. Nabelek, A. Nabelek, and I. J. Hirsh. **45:** 293—1969

Study of per- and poststimulatory fatigue in pitch perception. Paul Skinner and Frank Antinoro. **45:** 342—1969

4.10 Subjective Tones

Papers

Consonance theory part I: consonance of dyads. Akio Kameoka and Mamoru Kuriyagawa, **45:** 1451—1969.

Consonance theory part II: consonance of complex tones and its calculation method. Akio Kameoka and Mamoru Kuriyagawa. **45:** 1460—1969

Differential asynchrony thresholds for auditory pulse trains. Irwin Pollack. **45:** 446—1969

Effect of masking noise and pulse level upon jitter detection. Irwin Pollack **45:** 1022—1969

Mach bands in hearing. Edward C. Carterette, Morton P. Friedman, and John D. Lovell. **45:** 986—1969

Noise masking of a change in residue pitch. Roy D. Patterson. **45:** 1520—1969

Pitch of frequency-modulated sinusoids. Keener D. McClelland and John F. Brandt. **45:** 1489—1969

Temporal integration and periodicity pitch. Richard A. Campbell and S. Allen Counter. **45:** 691—1969

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Note on "Comments on 'The use of noise bands to establish noise pitch'" [D. D. Greenwood, J. Acoust. Soc. Amer. **44**, 634–635(L) (1968)]. E. D. Schubert. **45:** 238—1969

On estimating aural harmonics. Earl D. Schubert. **45:** 790—1969

Periodicity pitch for interrupted white noise—fact or artifact? Irwin Pollack. **45:** 237—1969

Technical Notes and Research Briefs

Submicrosecond auditory jitter discrimination thresholds. Irwin Pollack. **45:** 1058—1969

Abstracts

Some nonlinear phenomena in recordings from single auditory-nerve fibers. Julius L. Goldstein and Nelson Y. S. Kiang. **45:** 305—1969

Some properties of cochlear combination tones. Peter Dallos. **45:** 305—1969

4.11 Theories of Hearing

Papers

Amplitude discrimination in noise, pedestal experiments, and additivity of masking. G. Bruce Henning. **45:** 426—1969

Auditory temporal masking and the perception of order. J. L. Homick, L. F. Elfner, and G. G. Bothe. **45:** 712—1969

Binaural masking with sine-wave maskers. Frederic L. Wightman. **45:** 72—1969

Consonance theory part I: consonance of dyads. Akio Kameoka and Mamoru Kuriyagawa. **45:** 1451—1969

Consonance theory part II: consonance of complex tones and its calculation method. Akio Kameoka and Mamoru Kuriyagawa. **45:** 1460—1969

Effect of duration on amplitude discrimination in noise. G. Bruce Henning and Joseph Psotka. **45:** 1008—1969

Envelope versus microstructure in the fusion of dichotic signals. Earl D. Schubert and Joel Wernick. **45:** 1525—1969

Evolution of human hearing, the. Bruce Masterton, Henry Heffner, and Richard Ravizza. **45:** 966—1969

Frequency modulation and the difference limen for frequency. Lawrence L. Feth, Richard V. Wolf, and Robert C. Bilger. **45:** 1430—1969

Frequency selectivity during amplitude discrimination of signals in noise. Gordon Z. Greenberg. **45:** 1438—1969

Mach bands in hearing. Edward C. Carterette, Morton P. Friedman, and John D. Lovell. **45:** 986—1969

Noise masking of a change in residue pitch. Roy D. Patterson. **45:** 1520—1969

On the discrimination of frequency transitions. I. Nabelek and I. J. Hirsh. **45:** 1510—1969

Receiver operating characteristics and psychometric functions determined under simple- and pedestal-detection conditions. Barry Leshowitz. **45:** 1474—1969

Rôle of signal onset in sound localization. David R. Perrott. **45:** 436—1969

Temporal integration and periodicity pitch. Richard A. Campbell and S. Allen Counter. **45:** 691—1969

Letters to the Editor

Masking of tones before, during, and after brief silent periods in noise. Lois L. Elliott. **45:** 1277—1969

Periodicity pitch for interrupted white noise—fact or artifact? Irwin Pollack. **45:** 237—1969

Abstracts

Absolute identification of sound intensity: dependence of observer sensitivity on range and number of stimuli. L. D. Braida. **45:** 326—1969

Bandwidth estimates in human signal detection. Al Ahumada, Jr., and John Lovell. **45:** 327—1969

Hearing in primitive mammals. Bruce Masterton, Richard Ravizza, and Henry Heffner. **45:** 299—1969

Lateralization and detection of a tonal signal in noise. Dennis McFadden. **45:** 327—1969

Nonlinear cochlear microphonic potentials. Donald H. Eldredge and A. Maynard Engebretson. **45:** 305—1969

Pitch of frequency-modulated signals. Keener D. McClelland and John F. Brandt. **45:** 293—1969

Some properties of cochlear combination tones. Peter Dallos. **45:** 305—1969

4.12 Timbre

Papers

Consonance theory part I: consonance of dyads. Akio Kameoka and Mamoru Kuriyagawa. **45:** 1451—1969

Consonance theory part II: consonance of complex tones and its calculation method. Akio Kameoka and Mamoru Kuriyagawa. **45:** 1460—1969

Frequency modulation and the difference limen for frequency. Lawrence L. Feth, Richard V. Wolf, and Robert C. Bilger. **45:** 1430—1969

On the discrimination of frequency transitions. I. Nabelek and I. J. Hirsh. **45:** 1510—1969

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Submicrosecond auditory jitter discrimination thresholds. Irwin Pollack. **45:** 1058—1969

4.15 Perception of Signals

Papers

Amplitude discrimination in noise, pedestal experiments, and additivity of masking. G. Bruce Henning. **45:** 426—1969

Auditory detection and recognition under conditions of lateral, temporal, and composite uncertainty. G. Lowe and D. C. Earle. **45:** 1485—1969

Auditory temporal masking and the perception of order. J. L. Homick, L. F. Elfner, and G. G. Bothe. **45:** 712—1969

Auditory thresholds during stroboscopic visual stumulation. Raymond S. Karlovich. **45:** 1470—1969

Consonance theory part I: consonance of dyads. Akio Kameoka and Mamoru Kuriyagawa. **45:** 1451—1969

Consonance theory part II: consonance of complex tones and its calculation method. Akio Kameoka and Mamoru Kuriyagawa. **45:** 1460—1969

Differential asynchrony thresholds for auditory pulse trains. Irwin Pollack. **45:** 446—1969

Effect of duration on amplitude discrimination in noise. G. Bruce Henning and Joseph Psotka. **45:** 1008—1969

Effect of masking noise and pulse level upon jitter detection. Irwin Pollack. **45:** 1022—1969

Frequency selectivity during amplitude discrimination of signals in noise. Gordon Z. Greenberg. **45:** 1438—1969

Intensity discrimination of Rayleigh noise. D. A. Ronken. **45:** 54—1969

Lateralization and detection of a tonal signal in noise. Dennis McFadden. **45:** 1505—1969

Multiple ratings of sound stimuli. Jean S. Kerrick, David C. Nagel, and Ricarda L. Bennett. **45:** 1014—1969

Perceptual masking in multiple sound backgrounds. Raymond Carhart, Tom W. Tillman, and Elizabeth S. Greetis. **45:** 694—1969

Receiver operating characteristics and psychometric functions determined under simple- and pedestal-detection conditions. Barry Leshowitz. **45:** 1474—1969

Release from multiple maskers: effects of interaural time disparities. Raymond Carhart, Tom W. Tillman, and Elizabeth Greetis. **45:** 411—1969

Letters to the Editor

Extension of some observations of Leshowitz and Raab. G. Bruce Henning and Joseph Psotka. **45:** 785—1969

From gap to jitter discrimination. Irwin Pollack. **45:** 1279—1969

Technique for enhancing signals for auditory detection. R. C. Lummis and M. R. Schroeder. **45:** 1290—1969

Abstracts

Absolute identification of sound intensity: dependence of observer sensitivity on range and number of stimuli. L. D. Braida. **45:** 326—1969

Amplitude discrimination in noise, pedestal experiments, and additivity of masking. G. Bruce Henning. **45:** 327—1969

Auditory detection of short-duration narrow-band-noise signals. John Whitmore. **45:** 327—1969

Automatic detection of English stress. Elizabeth Jancosek and Yukio Takefuta. **45:** 316—1969

Bandwidth estimates in human signal detection. Al Ahumada, Jr., and John Lovell. **45:** 327—1969

Detection of signal with Poisson arrival time. R. Duncan Luce and David M. Green. **45:** 327—1969

Dynamic relations between speaking and hearing. Harlan Lane and Bernard Trane. **45:** 315—1969

Echolocation: Processing of range information by bats. James A. Simmons. **45:** 300—1969

Effect of signal duration on pure-tone masking. Richard H. Ehmer and Barbara J. Ehmer. **45:** 336—1969

Effects of signal frequency on sequential aspects of signal detection performance. R. D. Sorkin and R. E. Pastore. **45:** 326—1969

Evoked potentials in man in response to words. A. J. Derbyshire, S. B. Osenar, L. R. Hamilton, and M. E. Joseph. **45:** 312—1969

Image fusion, broadening and displacement in sound localization. Mark B. Gardner. **45:** 328—1969

Lateralizability and detectability of a low-frequency tone as a function of signal-masker phase. Donald E. Robinson and William A. Yost. **45:** 336—1969

Lateralization and detection of a tonal signal in noise. Dennis McFadden. **45:** 327—1969

Monaural detection with contralateral cue (MDCC): interference between detection processes. M. M. Taylor, D. P. J. Clarke, and S. Smith. **45:** 327—1969

Simultaneous and time-staggered speech signals in monaural and dichotic listening. Charles I. Berlin, Sena Lowe, and Carl Thompson. **45:** 337—1969

Sonic sensitivity of the blind cave fish (*Anoptichthys jordani*). Burton A. Weiss. **45:** 300—1969

Time–intensity trading relations as a function of signal frequency. Charles S. Watson and Roy W. Gengel. **45:** 294—1969

4.16 Vibration and Tactile Senses

Technical Notes and Research Briefs

Ceramic pin deaf aid. **45:** 521—1969

Abstracts

Distribution and anatomy of lateral line organs in the tail of the mudpuppy. Lawrence S. Frishkopf, Gerard G. Harris, and Åke Flock. **45:** 300—1969

Receptor potentials in the hair cells of mudpuppy lateral line. Gerard G. Harris, Lawrence S. Frishkopf, and Åke Flock. **45:** 300—1969

Sonic sensitivity of the blind cave fish (*Anoptichthys jordani*). Burton A. Weiss. **45:** 300—1969

5 ACOUSTICAL INSTRUMENTS AND APPARATUS. (See also 2.8, 4.5, 9.6, 10.3, 12.3, 12.3p, 12.3z, 13.11, 13.11n, and 13.11t.)

5.1 General, Unclassified

Technical Notes and Research Briefs

Nuclear-powered acoustic-controlled wellhead. **45:** 522—1969

Abstracts

Development of a new, large-vehicle acoustical test facility. William H. Craft. **45:** 347—1969

Mobile noise-measurement laboratory. Conrad J. Hemond, Jr., and Edward N. Stevensen, Jr. **45:** 347—1969

Patents

Acoustic leak detecting apparatus. Fenton M. Wood. **45:** 820—1969

Apparatus for acoustically measuring volume. Benny B. Mathias. **45:** 1069—1969

Apparatus for mixing fluids. John Jacobs III. **45:** 820—1969

Sound producing ball. June L. Sebree. **45:** 1070—1969

Stethoscope with sound spectrum selection. Russell K. Anderson and Lloyd C. Sanford. **45:** 1314—1969

5.2 Amplifiers and Attenuators

Patents

Audio level governing device. Charles J. Affelder. **45:** 531—1969

Electronic apparatus. Leslie P. Golonski. **45:** 1070—1969

Signal amplifying device. Nobutoshi Kihara. **45:** 281—1969

Ultrasonic amplifier device with means for preventing self-oscillation. William E. Newell. **45:** 1314—1969

5.3 Acoustic-Impedance Measurement. (See also 11.5 and 12.3z.)

Abstracts

Device for the measurement of acoustic impedance in air. Janet A. L. Rudolph and E. L. Hixson. **45:** 331—1969

Experimental evaluation of moving sound diffusers for reverberation rooms. Charles Ebbing. **45:** 343—1969

Measurement of the high-pressure propagation constants in various materials. R. W. Higgs and L. J. Eriksson. **45:** 346—1969

Method of computing elements of diaphragm-type transducers. Richard W. Carlisle. **45:** 331—1969

Method of measuring the acoustical impedance in air. Josef Merhaut. **45:** 331—1969

Testing of an artificial mastoid. V. Bruel. **45:** 339—1969

5.4 Analyzers and Filters, Acoustic and Electric. Oscillographs. Acoustic Delay Lines and Resonators. (See also 5.15 and 12.3f.)

Papers

Coupling through small apertures, with an application to Helmholtz' resonator. J. Van Bladel. **45:** 604—1969

Shear–flexure–twist vibrations in rectangular *AT*–Cut quartz plates with partial electrodes. P. C. Y. Lee and W. J. Spencer. **45:** 637—1969

Thickness–twist vibrations in beveled *AT*–cut quartz plates. G. T. Pearman. **45:** 928—1969

Patents

Piezoelectric ceramic resonators. Oskar E. Mattiat. **45:** 1315—1969

Piezoelectric resonator. Donald J. Koneval and Daniel R. Curran. **45:** 281—1969

Piezoelectric resonator and method of making same. Donald J. Koneval and Daniel R. Curran. **45:** 281—1969

5.5 Audiometers. (See also 4.4 and 4.5.)

Technical Notes and Research Briefs

Award winning acoustic devices. **45:** 1061—1969

Abstracts

Method for masking audiometry. Jerry V. Tobias. **45:** 343—1969

Variables affecting pulsed-tone Békésy thresholds. R. Bruce McCommons and David C. Hodge. **45:** 342—1969

5.8 Loudspeakers, Horns, Measurements. Practical Sound Sources. (See also 5.13, 5.17, and 5.18.)

Papers

Evaluation of the acoustic response of an air–water siren. W. S. Mitchell and D. Muster. **45:** 83—1969

Theoretical analysis of the performance of an air-modulated speaker. Warren A. Meyer. **45:** 957—1959

Letters to the Editor

Acoustic detection of structural failure of mechanical cables. Patricio A. Laura, Hendrikus Vanderveldt, and Paul Gaffney. **45:** 791—1969

Abstracts

Air and water sirens—their analysis, design and performance. W. S. Mitchell and D. Muster. **45:** 345—1969

Patents

Clarinet. Leon Leblanc. **45:** 1072—1969

Coherent-sound loudspeaker. Lincoln Walsh. **45:** 1584—1969

Extensible loudspeaker loading chamber. Anthony Kowalik and John Virva. **45:** 282—1969

High fidelity speaker enclosure. Leo L. Tomkins. **45:** 282—1969

Loudspeaker enclosure. Edward J. Murry. **45:** 532—1969

Loudspeaker screen and process for making same. Abraham Goodman. **45:** 282—1969

Loudspeaker systems. Curtiss R. Schafer. **45:** 532—1969

Random directivity loudspeaker. Hyman Hurvitz. **45:** 1070—1969

Sound reproducing apparatus. Stig Carlsson. **45:** 532—1969

Speaker cabinet enclosure. James C. Armstrong. **45:** 1070—1969

Speaker system. Lawrence H. Mitchell. **45:** 532—1969

Wide-range loudspeaker. Nathaniel Bishop. **45:** 533—1969

5.9 Microphones. Microphone-Calibration Equipment and Techniques. (See also 5.18, 12.3p, and 13.11t.)

Abstracts

Accuracy of electrostatic actuators in microphone calibrations. Gunnar Rasmussen. **45:** 347—1969

Automatic data reduction with moving microphone. Richard J. Wells. **45:** 337—1969

Transient response of high-frequency condenser microphones. Robert W. Benson. **45:** 332—1969

Patents

Microphone employing piezoresistive element. Alpha M. Wiggins. **45:** 821—1969

Overload protection of pressure sensitive transducer. Friedrich Krieger and Adolf Pascher. **45:** 1315—1969

Pressure gradient directional microphone. Harold S. Mawby. **45:** 1315—1969

Pressure-sensitive semiconductor microphone. Friedrich Krieger, Martin Sauer, and Gert Conrad. **45:** 1315—1969

Shock-mounting for electromechanical transducer. Hermann K. Gummel and Vicent L. Rideout. **45:** 821—1969

Sound translating apparatus. Adolph R. Morgan. **45:** 821—1969

5.10 Navigational Instruments Using Air Sound. Altitude-Measuring Instruments. Sound Ranging. (For Underwater Ranging, see 13.11n.)

Patents

Aural landing speed system. John P. Staples. **45:** 1071—1969

Ultrasonic surveyor's distance measuring instrument. Charles M. Alsabrook. **45:** 1071—1969

5.11 Oscillators, Electrical and Mechanical

Papers

Impacting oscillatory devices. G. N. Bycroft. **45:** 131—1969

5.13 Sound-Reproducing Systems, Including Public-Address Systems, Stereophonic Reproduction

Patents

Four-speaker adjustable stereo sound system. Thomas A. Prewitt and Donald E. Brinkerhoff. **45:** 1071—1969

Panoramic mixer. Serguei Vladimirovich Marsov. **45:** 534—1969

Simulated stereophonic sound translating and recording system. Jack A. Somer. **45:** 282—1969

Stereophonic amplifiers and output transformers. Norman H. Crowhurst. **45:** 533—1969

Stereophonic audio frequency signal amplifier systems. Roy S. Fine and Sydney V. Perry. **45**: 533—1969
Stereophonic blend circuit. David Haffler, **45**: 533—1969
Stereophonic sound reproducing arrangement. William R. Aiken. **45**: 1071—1969
Stereophonic sound system. John F. Eberhardt and James A. Eberhart. **45**: 282—1969

5.15 Sound-Level Meters. Level Recorders. Sound-Pressure Measurement. (See also 5.4)

Papers

On estimating noisiness of aircraft sounds. Robert W. Young and Arnold Peterson. **45**: 834—1969

Letters to the Editor

Acoustic detection of structural failure of mechanical cables. Patricio A. Laura, Hendrikus Vanderveldt, and Paul Gaffney. **45**: 791—1969

Abstracts

Automatic data reduction with moving microphone. Richard J. Wells. **45**: 337—1969
Digital technique for determining one-third octave sound-pressure levels with more uniform confidence level. John W. Shipley and Ronald A. Slusser. **45**: 347—1969
Loudness meter. R. A. Hackley, H. F. Olson, and D. S. McCoy. **45**: 346—1969
Measurements of impulse noise. C. G. Wahrmann. **45**: 345—1969
Sound-power measurements in a reverberant room. Theodore J. Schultz. **45**: 344—1969

Patents

Detonation meter. Paul E. Kahler. **45**: 534—1969
Industrial noise hazard meter. Paul Lee Michael, John Phillip Strange, and Kenneth Carr Stewart. **45**: 1071—1969

5.16 Sound Recording and Reproducing. General

Patents

Electrical tape synchronizing system. James T. Wright. **45**: 1315—1969

5.16d Mechanical Recording and Reproducing

Patents

Doll with phonograph. Ernest C. Freeman and Robert W. Freeman. **45**: 534—1969
Gun toy having sound producing means. J. W. Ryan, Richard Shih-Teng-Chang, and Robert Rosen. **45**: 1315—1969
Miniature phonograph. Theodore R. Duncan and Robert N. Aleson. **45**: 1071—1969
Toy phonograph for use with changeable records. Bernard Suchowski. **45**: 1071—1969
Toy record player. Walter L. Strauss. **45**: 534—1969

5.16f Photographic Recording and Reproducing

Patents

Mechanism for positioning rollers and transducer means relative to a film strip. Henry A. Thomson, Victor J. Witkowsky, and Philip N. Crawford. **45**: 282—1969
Photographic sound system for eliminating film blemish noise. Edward C. Barocela. **45**: 821—1969
Transducing system. David Paul Gregg. **45**: 1318—1969

5.16m Magnetic Recording and Reproducing

Patents

Abrasion resistant magnetic head. John Lewis, Edwin Baldwin, and Peter William Blaxtan. **45**: 284—1969
Apparatus for recording and reproducing sounds on magnetic sheets. Tatsuo Nagashima and Fujio Suganuma. **45**: 284—1969
Apparatus for recording high frequency signals on magnetic tape. Wayne K. Hodder. **45**: 283—1969
Apparatus for signal transducing along a curved overlapping track. Yoshiro Nakamatsu. **45**: 1316—1969
Automatic gain control for magnetic sound recorders. Adolf Wohlrab and Gunther Zwenig. **45**: 1317—1969
Chopper demodulator system for direct-record tape recorders. Abraham Silverstein. **45**: 1316—1969
Circuit arrangement for switching the amplifier in tape recorders and dictating machines. Friedrich Knochenhauer and Gunter Loffler. **45**: 283—1969
Constant-voltage supply for electronic equipment in battery-operated recording or playback apparatus. Wolf Dombacher. **45**: 1321—1969
Control system for a magnetic recorder. Goji Uchikoshi. **45**: 1318—1969
Deposited film transducing apparatus and method of producing the apparatus. David Paul Gregg. **45**: 1318—1969
Dictating machine with quick review apparatus. Richard K. Walker, **45**: 1317—1969
Editing of tape-recorded video signals. Johannes Hendrik Wessels. **45**: 1317—1969
Editing system utilizing recirculation means. James N. Cooper. **45**: 283—1969
Endless loop message recording apparatus with reset and indicating means. James B. Stewart. **45**: 1320—1969
Flexible disc magnetic storage device. Thomas A. Boissevain. **45**: 284—1969
High frequency magnetic head. Robert A. Schneider. **45**: 1320—1969
Magnetic erasing circuitry. Akira Hirota. **45**: 1319—1969
Magnetic erasing head. Gerold Schager. **45**: 284—1969
Magnetic head spacing apparatus. William H. Stark. **45**: 1319—1969
Magnetic head with means for producing a shiftable high permeability region in a magnetic permeable material. William M. Honig. **45**: 1319—1969
Magnetic recording dynamic range compressor/expander system. John Hughes Bennett. **45**: 285—1969
Magnetic recording head with unitary supporting body. Charles L. Vice. **45**: 1318—1969
Magnetic tape recorder with recessed concave tape guide. Leonard Dodge Barry. **45**: 283—1969
Magnetic recorder with tape driven flywheels. Karl-George Schwarz, Anton Hudek, and Walter Johner. **45**: 1318—1969
Magnetic tape recorders. Ronald Walker. **45**: 1316—1969
Magnetic tape recording and reproduction system. Paul R. Jones. **45**: 1317—1969

Magnetic transducer with single piece core. Edgar Alan Brown and Gunter Heinz Schacht. **45:** 1317—1969
Magnetically conductive ink recording system. Morris Schwartz and Werner K. Bender. **45:** 1318—1969
Method of manufacture of supports for magnetic heads. Godefridus Johannes Manders and Antonius Hubertus Vector van Lijf. **45:** 1316—1969
Multiple magnetic head assembly. Jan Albert Geurst and George Ludwig Walther. **45:** 285—1969
Multi-track bi-directional tape recorder with unidirectional actuated traversing transducers. Robert B. Rhoades. **45:** 1320—1969
Multi-track message recording apparatus. Irving E. Lempert and David Silman. **45:** 1321—1969
Oscillator-amplifier circuit utilizing recording amplifier for high frequency recording bias supply. Erling Peter Skov. **45:** 283—1969
Phase stable servo system for magnetic tape recording and reproducing device. Nobutoshi Kihara. **45:** 283—1969
Pliable magnetic recording disk with direct transducer contact. Robert C. Treseder. **45:** 284—1969
Pneumatic means for maintaining tape in contact with transducer. Johannes B. Groenewegen. **45:** 1320—1969
Process for manufacture of magnetic erase head. Paul H. Schulte. **45:** 1316—1969
Reversible tilting drive mechanism in a magazine type magnetic transducing apparatus. Osamu Gonmori. **45:** 1319—1969
Signal switching system utilizing magnetic switching for rotating head recorders. Donald M. Patterson, Robert L. Davis, and Robert F. Pfost. **45:** 284—1969
System for analysis and control of dynamic characteristics of mechanisms. Harold A. Kurth, Ben C. Wang, and Gerald A. Lembas. **45:** 284—1969
System for changing signal duration with reproduction frequency compensation. Johannes Anton Greefkes. **45:** 1319—1969
Tape recorder with random-wind cartridge. Aloysius Seidl. **45:** 1317—1969
Tape sensor for dictating machines. Marcel Jules Helene Staar. **45:** 1318—1969
Time compression and expansion recording system. Arie Liberman. **45:** 1320—1969
Transistorized annunciator with a recorded message. Winston E. Kock. **45:** 1320—1969
Transverse scan magnetic recording using a cathode ray tube recording means. Thomas A. Banning, Jr., and Emil L. Ranseen. **45:** 1319—1969
Unsymmetrical high density magnetic recording system. Andrew Gabor. **45:** 285—1969
Verification of magnetic recording. Charles M. Taris. **45:** 1585—1969
Video tape recording apparatus utilizing transversely scanning erase and record heads. Walter H. Bach. **45:** 283—1969

5.17 Telephones, Telephone Earphones. (See also 5.13.) Intercommunication Systems

Papers

Testing and performance of a wide-band underwater liquid communicator. W. S. Mitchell and D. Muster. **45:** 733—1969

Patents

Locally audible sound system. William T. Clark III. **45:** 285—1969
Rocking armature receivers. James Robertson and Leslie Bradshaw. **45:** 285—1969
Voice-switched interphone system. Frank J. Clement. **45:** 285—1969

5.18 Transducing Principles, Structures and Materials, General. (See also 5.8, 5.9, 5.17, 10.3, 12.3p, 13.7, and 13.11t.)

Papers

Flextensional underwater acoustics transducer. L. H. Royster. **45:** 671—1969
On the utilization of ferrofluids for transducer applications. Boyd B. Cary, Jr. and Francis H. Fenlon. **45:** 1210—1969
Radiation characteristics of spherically symmetric, perfect focusing acoustic lenses. C. A. Boyles. **45:** 351—1969
Wave theory of an acoustic Luneburg lens. II. The theory of variable density lenses. C. A. Boyles. **45:** 356—1969

Letters to the Editor

Applicability of amplitude detection for measuring the acoustic velocity of confined gases. J. L. Lewis, D. E. Nierode, R. A. Gaggioli, and I. C. Romer, Jr. **45:** 1037—1969

Abstracts

Measurement of the high-pressure propagation constants in various materials. R. W. Higgs and L. J. Eriksson. **45:** 346—1969
Method of computing elements of diaphragm-type transducers. Richard W. Carlisle. **45:** 331—1969
Subminiature inertial reaction transducer for air-conduction hearing aids. G. J. Sebesta, A. J. Mellen, and R. W. Carlisle. **45:** 343—1969

Patents

Acoustic resistance. Gerrit Schenkel. **45:** 286—1969
Digital output transducer. Daniel Hobel and Marvin Sleven. **45:** 822—1969
Electromechanical transducer. Howard Diamond. **45:** 1321—1969
Electromechanical transducer apparatus. Donald R. Church and James Da Rold. **45:** 821—1969
Force transducer. Jacob Chass. **45:** 822—1969
Method and apparatus for generating sonic signals. Donald S. Rodbell. **45:** 286—1969
Oscillatory circuit for electro-acoustic converter. Andrew Shoh. **45:** 1585—1969
Radioactive transducer for sensing pressure and the like having a source of primary radiation and a target for producing secondary radiation. Arthur T. Biehl and Gustave A. Lindenberger. **45:** 821—1969
Semiconductive transducers. Mathew E. Sikorski. **45:** 1321—1969
Transducers with substantially linear response characteristics. Cecil K. Stedman. **45:** 822—1969
Ultrasonic and hypersonic sound generator. Richard G. Brewer and Klaus E. Rieckhoff. **45:** 286—1969
Universal transducing cell. Louis D. Statham and Walter H. Eisele. **45:** 822—1969

5.18e Electrostatic Transducers

Patents

Acoustic transducer. Roswell P. Barnes, Jr. **45:** 1321—1969

5.18f Magnetostrictive Transducers

Papers

Nonlinear design technique for high-power magnetostrictors. Roy. R. Whymark. **45:** 827—1969

On the utilization of ferrofluids for transducer applications. Boyd B. Cary, Jr. and Francis H. Fenlon. **45:** 1210—1969

Abstracts

Determination of the large-amplitude properties of magnetostrictive materials. R. R. Whymark. **45:** 346—1969

Patents

Devices for sensing and indicating variations in frequency and amplitude of acoustically vibrated work members. Claus Kleesattel, Arthur Kuris, and Lewis Balamuth. **45:** 1321—1969

5.18p Piezoelectric Transducers, Ferroelectrics

Papers

Shear–flexure–twist vibrations in rectangular AT-cut quartz plates with partial electrodes. P. C. Y. Lee and W. J. Spencer. **45:** 637—1969

Some simple modes of wave propagation in an infinite piezoelectric plate. Jeffrey L. Bleustein. **45:** 614—1969

Thickness-twist vibrations in beveled *AT*-cut quartz plates. G. T. Pearman. **45:** 928—1969

Technical Notes and Research Briefs

On the measurement of the temperature rise in composite piezoelectric stacks. L. H. Royster. **45:** 1573—1969

Abstracts

Advantages and disadvantages in various accelerometer designs. Jens August Jensen. **45:** 332—1969

Effect of static and dynamic stress on the mechanical loss of lead zirconate titanate transducer ceramic. R. R. Whymark and K. Triebes. **45:** 346—1969

Vibration isolation of pressure transducers for determination of acoustic environment. S. V. Paranjape and E. Simon. **45:** 346—1969

Patents

Ceramic ferroelectric bodies. Jean-Pierre Borel and Lucien A. Petermann. **45:** 1321—1969

Electromechanical transducer system. Stanley R. Rich. **45:** 286—1969

Ferroelectric devices. Allen L. Solomon and Goerge J. Goldsmith. **45:** 286—1969

High efficiency sonic generator. Jack Kritz. **45:** 1072—1969

Method of producing a transducer. Fay E. Gifford and Charles W. Williams. **45:** 534—1969

Phonocardiograph transducer. William J. Young. **45:** 285—1969

Piezoelectric materials. Lebo R. Shiozawa. **45:** 822—1969

Prestressed piezoelectric transducer. Vance F. Boswell. **45:** 286—1969

Rolling ultrasonic transducer. Lawrence C. Lynnworth. **45:** 1585—1969

Ultrasonic cleaning apparatus. Stanley Emil Jacke and John W. Collison. **45:** 1072—1969

Ultrasonic inspection of plywood panel. Jack T. Collins. **45:** 1585—1969

Ultrasonic transducer with a fluorocarbon damper. James L. Lenahan and John R. Colbert. **45:** 1585—1969

Ultrasonic transducer with absorptive load. Donn D. Lobdell and Edward H. Phillips. **45:** 286—1969

5.19 Tuning Forks, Frequency Standards, Frequency-Measuring and -Recording Instruments. Time Standards. Chronographs

Papers

Envelope periodicity detection. Miroslav Filip. **45:** 719—1969

5.21 Vibration Devices. Devices for Generating or Damping Vibrations. (See also 12., 12.3, 12.3i, 12.3p, and 12.3v.)

Papers

Instrumentation for 80-Hz seismic communications. K. Ikrath, W. A. Schneider, R. F. Johnson, and K. J. Murphy. **45:** 621—1969

Piezoelectric shakers for wide-frequency calibration of vibration pickups. E. Jones, W. B. Yelon, and S. Edelman. **45:** 1556—1969

Letters to the Editor

Comments on "Natural frequencies and modes of skew membranes" [S. Durvasula, J. Acoust. Soc. Amer. **44,** 1636—1646 (1968)] P. A. Laura. **45:** 1281—1969

Technical Notes and Research Briefs

Sonic sifter. **45:** 523—1969

6 MUSIC AND MUSICAL INSTRUMENTS

6.1 General, Unclassified

Abstracts

Learnability of melodies generated by a simple Markov process. Kirk H. Smith and Max V. Mathews. **45:** 314—1969

Modern day rock-and-roll music and damage-risk criteria. James M. Flugrath. **45:** 314—1969

Book Reviews

Orgelakustik in Einzeldarstellungen. Werner Lottermosser and Jürgen Meyer. (Reviewed by Robert W. Young) **45:** 260—1969

Repertoire International des Musiques Electro-acoustiques—International Electronic Music Catalog. Hugh Davies, Ed. (Reviewed by M. V. Mathews.) **45:** 804—1969

6.3 Brass Wind Instruments (Lip-Vibrated)

Abstracts

Effect of dispersion and scattering on the startup of brass instrument tones. A. H. Benade. **45:** 296—1969

Human factors in wind-instrument performance. Arend Bouhuys. **45:** 296—1969

Mathematical model of the brass-player's embouchure. Robert W. Pyle. **45:** 296—1969

Practical design of brass wind instruments. George McCracken. **45:** 297—1969

Spectral component coupling in wind instruments. W. E. Worman. **45:** 313—1969

Trumpet intonation improvement with multiple Helmholtz resonator terminations. W. T. Cardwell, Jr. **45:** 296—1969

6.4 Drums and Other Membranophonic Instruments

Abstracts

Quality of bass drum tones. Harvey Fletcher and Irvin G. Bassett. **45:** 313—1969

6.5 Pipe Organs

Abstracts

Correlations between theoretical and measured standing-wave patterns in a cylinder. Paul A. Bert. **45:** 313—1969

Motion of jet in mouth of organ pipe. W. E. Fasnacht. **45:** 313—1969

Observation of the motion of the tongue in a reed organ pipe. D. Hurley Robbins. **45:** 313—1969

6.6 Pianos and Other Keyboard Stringed Instruments

Patents

Apparatus of keyboard instruction. Verna M. Leonard. **45:** 822—1969

Stringed musical instrument. William L. Hoyt. **45:** 287—1969

6.7 Violin Family. Stringed Instruments, Except Keyboard Type

Abstracts

Measurement of acoustical characteristics of the concert guitar. Michael Kasha and E. Eugene Watson. **45:** 314—1969

Patents

Guitar with remote control organ playing means. Thomas E. Sines. **45:** 822—1969

Interchangeable neck assemblies for electrical musical instruments. Billy G. Dycus. **45:** 823—1969

Methods of tuning musical instruments. Carol E. England. **45:** 287—1969

Stringed instrument construction. Norman M. Johnston. **45:** 823—1969

Violin bass bar and sound post construction. Vincenzo Di Sibio. **45:** 287—1969

6.8 Wood Winds

Letters to the Editor

Influence of reed motion on the resonance frequency of reed-blown wood-wind instruments. C. J. Nederveen. **45:** 513—1969

Abstracts

Computer model of a clarinet. Glen A. Higbee and William J. Strong. **45:** 313—1969

Digital technique for synthesis of oboe tones. George Plitnik and William J. Strong. **45:** 313—1969

Spectral component coupling in wind instruments. W. E. Worman. **45:** 313—1969

6.9 Electrical Musical Instruments

Patents

Acoustic system. James S. Southard and Curt R. Wolfanger. **45:** 1586—1969

Electric guitar bridge. Robert C. Scherer. **45:** 823—1969

Vibrato and tremolo system. Keith D. Jacob. **45:** 1072—1969

6.10 Reed Organs. Accordions, Harmonicas

Abstracts

Observation of the motion of the tongue in a reed organ pipe. D. Hurley Robbins. **45:** 313—1969

6.11 Singing

Abstracts

Acoustical study of isoparametric tones in the female chest and middle registers in singing. John W. Large. **45:** 314—1969

6.12 Intonation. Vibrato. Musical Scales. Musical Composition

Papers

Envelope periodicity detection. Miroslav Filip. **45:** 719—1969

Abstracts

Learnability of melodies generated by a simple Markov process. Kirk H. Smith and Max V. Mathews. **45:** 314—1969

7 NOISE AND NOISE CONTROL

7.1 General, Unclassified

Papers

Measurement of ultrasonic attenuation and phase shift in the presence of noise. H. J. McSkimin and T. B. Bateman. **45:** 852—1969

Abstracts

"Challenge, the." N. E. Golovin. **45:** 320—1969

Mobile noise-measurement laboratory. Conrad J. Hemond, Jr. and Edward N. Stevensen, Jr. **45:** 347—1969

"Response, the." I. J. Hirsh. **45:** 320—1969

News

ASEE Committee promotes education in acoustics and noise control. **45:** 525—1969

Fifth International Congress on Noise Abatement, 1968. **45:** 256—1969

List of published standards on noise and related topics. **45:** 795—1969

Meeting to study vehicle noise. **45:** 800—1969

National Council on Noise Abatement. **45:** 1291—1969

Noise-reduction award. **45:** 1066—1969

7.2 Annoyance. Effect of Noise on Human Beings

Papers

Judged noisiness of modulated and multiple tones in broad-band noise. Karl S. Pearsons, Dwight E. Bishop, and Richard D. Horonjeff. **45:** 742—1969

Modern-day rock-and-roll music and damage-risk criteria. James M. Flugrath. **45**: 704—1969
Noise, you can get used to it. J. C. Webster and M. Lepor. **45**: 751—1969
On estimating noisiness of aircraft sounds. Robert W. Young and Arnold Peterson. **45**: 834—1969
Prevalence of impaired hearing and sound levels at work. James H. Botsford. **45**: 79—1969

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Jet noise and safety! Robert J. Serling. **45**: 1574—1969
New jet noise regulations. **45**: 1060—1969
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Ring your chimes? **45**: 1576—1969

Abstracts

Adaption of current auditory damage-risk criteria for use in aerospace operations. Donald C. Gasaway and Harrell C. Sutherland. **45**: 330—1969
Combination effects of tone and duration parameters on perceived noisiness. Karl S. Pearsons. **45**: 329—1969
Comparative annoyance of "approaching" versus "receding" sound sources. Charles W. Nixon, H. E. von Gierke, and George Rosinger. **45**: 330—1969
Laboratory facility for annoyance rating studies. Franklin D. Hart and Richard G. Pearson. **45**: 330—1969
Measurement and evaluation of aircraft noise. F. W. Kolk. **45**: 322—1969
Modern day rock-and-roll music and damage-risk criteria. James M. Flugrath. **45**: 314—1969
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On estimating noisiness of aircraft sounds. Robert W. Young and Arnold Peterson. **45**: 330—1969
Rating of noise exposures for hearing conservation. A. Glorig. **45**: 320—1969
Rating of noise with respect to annoyance. D. M. Green. **45**: 321—1969
Rating of noise with respect to human response—a summary of status, problems, and outlook. R. S. Gales. **45**: 322—1969
Rating of noise with respect to speech interference. J. C. Webster. **45**: 321—1969
Temporary threshold shifts (TTS) produced by noise exposures of long duration. Henry M. Carder and James D. Miller. **45**: 343—1969
TTS following exposure to rock-and-roll music. Charles Speaks and David A. Nelson. **45**: 342—1969

Patents

Acoustic sleep induction apparatus. Norman A. Rautiola and John M. Diehl. **45**: 287—1969

7.4 Community Noise

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Abstracts

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Measurement and evaluation of outdoor community noise. J. H. Botsford. **45**: 321—1969
On estimating noisiness of aircraft sounds. Robert W. Young and Arnold Peterson. **45**: 330—1969

7.5 Noise Spectra

Abstracts

Characteristics of noise generated by secondary and auxiliary aircraft systems. Donald C. Gasaway. **45**: 330—1969
Noise measurements and noise measurement systems. W. W. Lang. **45**: 320—1969

7.6 Noise in Buildings. (See also 2.2.)

Abstracts

Measurement and evaluation of room noise. L. S. Goodfriend. **45**: 321—1969
Plumbing noise and the classification of valve noise. F. Michael Strumpf. **45**: 298—1969

7.7 Machinery Noise. Mufflers. Noise Silencers

Abstracts

Attenuation characteristics of lined turns in large jet engine test cells. Lewis H. Bell. **45**: 345—1969
Measurement and evaluation of motor vehicle noise. J. Venema. **45**: 322—1969
Measurement and evaluation of stationary noise sources. P. K. Baade. **45**: 321—1969
Rotor/propeller rotational noise analysis including time-varying blade forces. Gerald J. Healy. **45**: 344—1969
Theoretical prediction of aerodynamically generated noise in fans and compressors. M. J. Benzakein and S. B. Kazin. **45**: 345—1969

Patents

Absorptive splitter for closely spaced supersonic engine air inlets. Howard Kastan. **45**: 536—1969
Acoustic quarter wave tube. Richard Wilcox and J. Alson Beaman. **45**: 1587—1969
Adjustable jet silencer nozzle with controlled flaps and follower flaps. Rene Gerard Hoch, Louis Francois Jumelle, and Jean Marie Minos. **45**: 538—1969
Air exhaust noise attenuator. John B. Trainor. **45**: 537—1969
Air ventilator sound control assembly. Robert D. Lowry and John W. Harrison. **45**: 1074—1969
Apparatus for attenuating sound waves in gas streams and method of producing same. Glenn R. Crouse. **45**: 1072—1969
Ceramic coated muffler. Karl K. Kerns and Ervin C. Lentz. **45**:1586—1969
Dual purpose muffler with valved by-pass means. Alvin S. Haining. **45**: 1586—1969
Engine exhaust muffler. Manley C. Marcellus. **45**: 1586—1969
Exhaust muffler pipe assembly. James L. Ballard. **45**: 1587—1969
Exhaust muffler with expansion chambers in inlet cover dome. **45**: 1074—1969

Exhaust pipe with tubular sound attenuating chamber-forming means disposed therein. Floyd E. Deremer. **45:** 1072—1969

Exhaust silencer and heat recovery unit. Edgar S. Stoddard, Jr. **45:** 1072—1969

Exhaust valve silencer with sintered metal silencing disc. Seymour F. Stryker. **45:** 536—1969

Flexible exhaust gas conduit and muffler. Donald S. Willy. **45:** 1074—1969

Gas blast circuit breaker with noise reducing exhaust muffler assembly. Han Chang and Vincent N. Stewart. **45:** 535—1969

Gas turbine exhaust silencer and acoustical material therefor. Leslie S. Wirt. **45:** 1073—1969

Insulated outboard motor housing. Robert A. Boda and Delhardt K. Kollman. **45:** 537—1969

Jet engine sound suppressor with Coanda effect deflector. Gunter Kurtze. **45:** 538—1969

Jet exhaust silencing nozzle with suction applied at exit wall. Robert Charles Chanaud and Gunnar Heskestad. **45:** 538—1969

Jet noise suppressor. Edgar M. De Remer. **45:** 535—1969

Jet silencer. Louis Duthion and Jean H. Bertin. **45:** 535—1969

Mobile noise suppressor for fan-jet aircraft. Charles J. Smith and Alvin J. Brungard. **45:** 537—1969

Muffler. Walter H. Powers, Ervin C. Lentz, and Karl K. Kerns. **45:** 1073—1969

Muffler. Thomas C. Kichmond. **45:** 1586—1969

Muffler and diffuser for underwater diving. Thomas E. Kelly and Frederick Bigger. **45:** 538—1969

Muffler and method. Robert I. Bingel. **45:** 1586—1969

Muffler and oxidizer means. Stephen G. Gerlach. **45:** 1072—1969

Muffler for downspouts and muffled downspout. Floyd J. Jensen. **45:** 1587—1969

Muffler with ceramic honeycomb baffle. John G. Lanning. **45:** 1586—1969

Muffler with loop-shaped band movable by gas pulsations. Shannon Oilee Thrasher. **45:** 1073—1969

Mufflers. Earl K. Harley, Jr. **45:** 1073—1969

Noise inhibiting device. Edward H. Miller and Francis O. Furman. **45:** 536—1969

Noise suppression of fan engines. John M. Tyler and Thomas G. Sofrin. **45:** 535—1969

Nozzle for suppressing jet noise. Ralph Murch Denning and William James Lewis. **45:** 535—1969

Pneumatic grinder with integral exhaust silencer. Robert J. Waldron. **45:** 537—1969

Silencer or muffler and method of producing same. James R. Hall. **45:** 1587—1969

Sound attenuating gas conduit with one-quarter wavelength side branch chambers. Benjamin H. Irwin, Raymond L. Placek, and Kenneth Dow. **45:** 536—1969

Sound deadening laminated engine exhaust pipe. John W. Sailler. **45:** 534—1969

Sound isolating enclosure for internal combustion engine generator set. Terrence A Dear and Lewis J. Hemmis. **45:** 536—1969

Sound suppressors particularly for jet engines. Gunter Kurtze. **45:** 537—1969

Supersonic intake for a jet engine. Malcolm Roy Pike. **45:** 537—1969

Turbine exhaust silencer. Leslie S. Wirt. **45:** 536—1969

Underwater exhaust muffler. John S. Davis. **45:** 1073—1969

Variable volume exhaust muffler for fluid operated tools. Frederick M. Kessler. **45:** 1073—1969

7.8 Noise Generators (Solid, Liquid, and Gaseous). Sirens

Papers

Evaluation of the acoustic response of an air-water siren. W. S. Mitchell and D. Muster. **45:** 83—1969

Testing and performance of a wide-band underwater liquid communicator. W. S. Mitchell and D. Muster. **45:** 733—1969

Abstracts

Air and water sirens—their analysis, design, and performance. W. S. Mitchell and D. Muster. **45:** 345—1969

7.10 Aerodynamic Noise. Jet Noise

Papers

Experimental study of aerodynamic sound from a rotating disk. Robert C. Chanaud. **45:** 392—1969

On estimating noisiness of aircraft sounds. Robert W. Young and Arnold Peterson. **45:** 834—1969

Letters to the Editor

On sound-transmission anomalies in the atmosphere. Uno Ingard. **45:** 1038—1969

Reply to "Reply to 'Comments on "Fairfield spectrum of the sonic boom"'" [Walton L. Howes, J. Acoust. Soc. Amer. **43,** 374–375 (L) (1968)] E. E. Zepler. **45:** 239—1969

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Characteristics of noise generated by secondary and auxiliary aircraft systems. Donald C. Gasaway. **45:** 330—1969

Fourier analysis of sound fields generated by large rocket engines. Robert C. Polly **45:** 344—1969

Jet-noise tests to determine effects of exhaust-gas heating. G. P. Haddle and H. E. Plumblee. **45:** 344—1969

Measurement and evaluation of aircraft noise. F. W. Kolk. **45:** 322—1969

Measurement and evaluation of motor vehicle noise. J. Venema. **45:** 322—1969

Measurement of sonic booms using capacitive transducers. Frede Skode. **45:** 331—1969

Noise measurements on world's largest airplane. John S. Gibson. **45:** 331—1969

Nonisentropic acoustic wave generation. Abraham C. Peter. **45:** 339—1969

On estimating noisiness of aircraft sounds. Robert W. Young and Arnold Peterson. **45:** 330—1969

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Theoretical prediction of aerodynamically generated noise in fans and compressors. M. J. Benzakein and S. B. Kazin. **45:** 345—1969

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Abstracts

"Challenge, the." N. E. Golovin. **45:** 320—1969

Measurement and evaluation of outdoor community noise. J. H. Botsford. **45:** 321—1969

Measurement and evaluation of stationary noise sources. P. K. Baade. **45:** 321—1969

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"Response, the." I. J. Hirsh. **45:** 320—1969

Sound-power measurements in a reverberant room. Theodore J. Schultz. **45:** 344—1969

Book Reviews

USA Standard Procedure for the Computation of Loudness of Noise S3.4—1968. USA Standards Institute. (Reviewed by Laurence Batchelder.) **45:** 530—1969

News

List of published standards on noise and related topics. **45:** 795—1969

Standards notes. **45:** 1065—1969

9 SPEECH COMMUNICATION

9.1 General, Unclassified

Papers

Computers in acoustics: symbiosis of an old science and a new tool. M. R. Schroeder. **45:** 1077—1969

Book Reviews

Effects of the Second Formant on the Perception of Velarization Constants in Arabic. Dean H. Obrecht. (Reviewed by William S-Y. Wang.) **45:** 1582—1969

Language and Symbolic Systems. Yuen Ren Chao. (Reviewed by Louis J. Gerstman.) **45:** 530—1969

Speech Analysis and Synthesis. Wiktor Jassem, Ed. (Reviewed by P. Mermelstein.) **45:** 1067—1969

News

Disorders of the larynx studied. **45:** 526—1969

Speech communication course. **45:** 801—1969

9.2 Anatomy and Physiology of the Larynx and Vocal Tract

Papers

Determination of the rate of change of fundamental frequency with respect to subglottal air pressure during sustained phonation. Philip Lieberman, Ronald Knudson, and Jere Mead. **45:** 1540—1969

Respiratory volumes in normal speech: A possible reason for intraoral pressure differences among voiced and voiceless consonants. Donald W. Warren and Matthew T. Wood. **45:** 466—1969

Transillumination of the larynx in running speech. Leigh Lisker, Arthur S. Abramson, Franklin S. Cooper, and Malcolm H. Schvey. **45:** 1537—1969

Vowel amplitude modulations in patients with laryngeal diseases. Yasuo Koike. **45:** 839—1969

Letters to the Editor

Generation of speechlike signals by excitation of the vocal tract at the lips. P. Mermelstein. **45:** 1282—1969

Abstracts

Acoustical study of isoparametric tones in the female chest and middle registers in singing. John W. Large. **45:** 314—1969

Computer-controlled display for second langauge learning. Dennis H. Klatt and Douglas Dodds. **45:** 324—1969

Globe valve as an analog to the speech phonation mechanism. F. Michael Strumpf. **45:** 324—1969

Mechanical behavior of the diaphragm during speech. Thomas J. Hixon, Fred D. Minifie, Alain H. Peyrot, and Arthur A. Siebens. **45:** 323—1969

Palatal movements for vowel-nasal and nasal-vowel utterances. Charles Speaks and Luis D. Benitez. **45:** 323—1969

Relation of intraoral air pressure to oral cavity size. W. S. Brown, Jr. and Robert E. McGlone. **45:** 323—1969

Transglottic air flow related to selected parameters of the voice. Robert E. McGlone. **45:** 323—1969

9.3 Acoustic Analysis of Speech

Papers

Cry characteristics in cleft-plate neonates. Raymond M. Massengill, Jr. **45:** 782—1969

Respiratory volumes in normal speech: a possible reason for intraoral pressure differences among voiced and voiceless consonants. Donald W. Warren and Matthew T. Wood. **45:** 466—1969

Vowel amplitude modulations in patients with laryngeal diseases. Yasuo Koike. **45:** 839—1969

Abstracts

Analysis of fundamental frequency contours. H. Levitt and L. R. Rabiner. **45:** 317—1969

Automatic speaker recognition based on pitch contours. B. S. Atal. **45:** 309—1969

Cinefluorographic study of speaking rate. Peter F. MacNeilage and Joseph L. DeClerk. **45:** 308—1969

Computer controlled display for second language learning. Dennis H. Klatt and Douglas Dodds. **45:** 324—1969

Digitalized sound spectrograph using FFT and multiprint techniques. Ernst Rothauser and Dietrich Maiwald. **45:** 308—1969

New look in speech analysis. J. Ryland Mundie and Thomas J. Moore. **45:** 308—1969

Regularities of cross correlations in spectra of speech. K. P. Li and G. W. Hughes. **45:** 309—1969

Speech analysis-synthesis system based on homomorphic filtering. Alan V. Oppenheim. **45:** 309—1969

Use of cochlea patterns in speech analysis. J. Ryland Mundie and Thomas J. Moore. **45:** 308—1969

Patents

Formant locating system. Raimo Bakis. **45:** 1074—1969

9.4 Speech Synthesis

Papers

Excitation of vocal-tract synthesizers. J. L. Flanagan and L. Cherry. **45:** 764—1969

Investigation of stress patterns for speech synthesis by rule. L. R. Rabiner, H. Levitt, and A. E. Rosenberg. **45:** 92—1969

On the motor control of coarticulation in CVC monosyllables. Peter F. MacNeilage and Joseph L. DeClerk. **45:** 1217—1969

Abstracts

Specification of a digital vocoder system. Walter M. Anderson, Jr. **45:** 308—1969

WINDBAG—a vocal-tract analog speech synthesizer. Brent Baxter and William J. Strong. **45:** 309—1969

9.5 Perception of Speech and Speechlike Sounds. (See also 4.15.)

Papers

Influence of fundamental frequency cues on the perception of some synthetic intonation contours. Wojciech Majewski and Richard Blasdell. **45:** 450—1969

Investigation of stress patterns for speech synthesis by rule. L. R. Rabiner, H. Levitt, and A. E. Rosenberg. **45:** 92—1969

Multidimensional analyses of circuit quality judgments. Barbara J. McDermott. **45:** 774—1969

Perception of (Hindi) consonants in clipped speech. J. P. Gupta, S. S. Agrawal, and Rais Ahmed. **45:** 770—1969

Release from multiple maskers: effects of interaural time disparities. Raymond Carhart, Tom W. Tillman, and Elizabeth S. Greetis. **45:** 411—1969

Significant features in the perception of (Hindi) consonants. Rais Ahmed and S. S. Agrawa. **45:** 758—1969

Abstracts

Automatic detection of English stress. Elizabeth Jancosek and Yukio Takefuta. **45:** 316—1969

Catalytic factors in speech perception. Ian B. Thomas. **45:** 316—1969

Discrimination of *F2* transitions in speech context and in isolation. Ignatius G. Mattingly, Alvin M. Liberman, Ann K. Syrdal, and Terry Halwes. **45:** 314—1969

Dynamic relations between speaking and hearing. Harlan Lane and Bernard Trane. **45:** 315—1969

Evoked potentials in man in response to words. A. J. Derbyshire, S. B. Osenar, L. R. Hamilton, and M. E. Joseph. **45:** 312—1969

Fundamental frequency estimation by harmonic identification. T. B. Snow and G. W. Hughes. **45:** 316—1969

Identification of selected vowel phonemes by children. J. H. Gilbert. **45:** 322—1969

Intelligibility and some perceptual confusions of three modes of speaking and filtering. Elaine Pressman. **45:** 315—1969

Signal processing for a cocktail party effect. O. M. M. Mitchell, C. A. Ross, and G. H. Yates. **45:** 315—1969

Simple technique for speech transposition in real time. Francis E. Flavin and Ian B. Thomas. **45:** 315—1969

Verbal transformation illusion: satiation or synthesis? Donald G. MacKay. **45:** 316—1969

Voice classification II: extension of sample and language independence. Herman R. Silbiger. **45:** 315—1969

Errata

Manifestations of task-induced stress in the acoustic speech signal [J. Acoust. Soc. Amer. **44,** 993–1001 (1968)] Michael H. L. Hecker. **45:** 519—1969

9.6 Measures of Speech Intelligibility, Quality, Information Content

Papers

Multidimensional analyses of circuit quality judgments. Barbara J. McDermott. **45:** 774—1969

Abstracts

Automatic detection of English stress. Elizabeth Jancosek and Yukio Takefuta. **45:** 316—1969

Identification of brief pauses in the fluent speech of stutterers and nonstutterers. Laura R. Love and Lloyd A. Jeffress. **45:** 316—1969

Identification of selected vowel phonemes by children. J. H. Gilbert. **45:** 322—1969

Intelligibility and some perceptual confusions of three modes of speaking and filtering. Elaine Pressman. **45:** 315—1969

Optimization of a prefiltering technique for the production of speech highly immune to noise. Russell J. Niederjohn and Ian B. Thomas. **45:** 316—1969

Simple technique for speech transposition in real time. Francis E. Flavin and Ian B. Thomas. **45:** 315—1969

Verbal transformation illusion: satiation or synthesis? Donald G. MacKay. **45:** 316—1969

Errata

Manifestations of task-induced stress in the acoustic speech signal [J. Acoust. Soc. Amer. **44,** 993–1001 (1968)] Michael H. L. Hecker. **45:** 519—1969

9.7 Phonetics, Linguistics, Statistics of Language

Papers

On the motor control of coarticulation in CVC monosyllables. Peter F. MacNeilage and Joseph L. DeClerk. **45:** 1217—1969

Transillumination of the larynx in running speech. Leigh Lisker, Arthur S. Abramson, Franklin S. Cooper, and Malcolm H. Schvey. **45:** 1537—1969

Abstracts

Acoustic influence of consonants on the duration of the American English vowel /I/. Ralph H. Fertig. **45:** 323—1969

Checked/unchecked correlation in the English vowels. Don Graham Stuart and Sadanand Singh. **45:** 323—1969

Computer-controlled display for second language learning. Dennis H. Klatt and Douglas Dodds. **45:** 324—1969

Globe valve as an analog to the speech phonation mechanism. F. Michael Strumpf. **45:** 324—1969

Identification of selected vowel phonemes by children. J. H. Gilbert. **45:** 322—1969

Intelligibility and some perceptual confusions of three modes of speaking and filtering. Elaine Pressman. **45:** 315—1969

Measuring distances of English phonemes using magnitude estimation. Sadanand Singh and Sonia P. Brokaw. **45:** 322—1969

Palatal movements for vowel-nasal and nasal-vowel utterances. Charles Speaks and Luis D. Benitez. **45:** 323—1969

Transducing jaw and lip movements in speech. John Ohala, Shizuo Hiki, Stanley Hubler, and Richard Harshman. **45:** 324—1969

9.8 Systems for Speech Transmission. Analysis-Synthesis Telephony, Speech Coding

Papers

Excitation of vocal-tract synthesizers. J. L. Flanagan and L. Cherry. **45:** 764—1969

Speech analysis-synthesis system based on homomorphic filtering. Alan V. Oppenheim. **45:** 458—1969

Technical Notes and Research Briefs

It had to happen. **45:** 1061—1969

Abstracts

Catalytic factors in speech perception. Ian B. Thomas. **45:** 316—1969

Digitalized sound spectrograph using FFT and multiprint techniques. Ernst Rothauser and Dietrich Maiwald. **45:** 308—1969

Optimization of a prefiltering technique for the production of speech highly immune to noise. Russell J. Niederjohn and Ian B. Thomas. **45:** 316—1969

Simple technique for speech transposition in real time. Francis E. Flavin and Ian B. Thomas. **45:** 315—1969

Specification of a digital vocoder system. Walter M. Anderson, Jr. **45:** 308—1969

Speech analysis-synthesis system based on homomorphic filtering. Alan V. Oppenheim. **45:** 309—1969

Patents

Pitch modification of audio waveforms. Wlater K. French and Oliver W. Johnson, Jr. **45:** 287—1969

Speech bandwidth compression system. J. L. Stewart. **45:** 1321—1969

Vocoder system. Gunnar Fant. **45:** 287—1969

9.9 Instruments for Speech Measurement

Papers

Envelope periodicity detection. Miroslav Filip. **45:** 719—1969

Letters to the Editor

Generation of speechlike signals by excitation of the vocal tract at the lips. P. Mermelstein. **45:** 1282—1969

9.10 Machine Recognition of Speech

Abstracts

Astronaut maneuvering-unit voice controller. M. B. Herscher, T. P. Kelley, R. G. Clodfelter, and D. R. Petroski. **45:** 309—1969

Automatic speaker recognition based on pitch contours. B. S. Atal. **45:** 309—1969

Exploratory strategy for the use of a dynamic subword segment in the automatic recognition of continuous speech (ARCS). Charles C. Tappert, N. Rex Dixon, and David H. Beetle. **45:** 310—1969

Synthetic language for machine recognition of speech. J. Z. Schanker. **45:** 309—1969

Patents

Method and apparatus for displaying speech. Cecil C. Bridges. **45:** 1322—1969

Speech analyzer for speech recognition system. Genung L. Clapper. **45:** 1322—1969

10 ULTRASONICS

10.1 General, Unclassified

News

Conference on Ultrasonic Attenuation and Internal Friction. **45:** 1579—1969

Conference on ultrasound in medicine. **45:** 1292—1969

Gordon Research Conference on Physical Acoustics. **45:** 800—1969

Light and sound conference. **45:** 1292—1969

NEC features microwave acoustics. **45:** 251—1969

Proceedings on Acoustical Holography. **45:** 1291—1969

Summer course in ultrasonics. **45:** 10666—1969

Ultrasonic attenuation and internal friction in crystalline solids. **45:** 251—1969

World Congress on Ultrasonic Diagnostics in Medicine-Vienna, Austria, 2–7 June 1969. **45:** 1297—1969

10.2 Physical Effects of Ultrasonic Waves. Optical Diffraction. Ultrasonic Processing

Papers

Acoustically induced optical anisotropy in liquids. Ward A. Riley and W. Richard Klein. **45:** 578—1969

Echo phase-comparison technique and measurement of sound velocity in water. R. C. Williamson. **45:** 1251—1969

Effect of large-amplitude static and dynamic stress on the mechanical loss of lead zirconate titanate transducer ceramic. Roy R. Whymark and Kenneth J. Triebes. **45:** 587—1969

Experimental detection of evanescent ultrasonic waves by Bragg diffraction of light. Glen Wade, John P. Powers, and Alwyn A. DeSouza. **45:** 1247—1969

Holographic imaging with ultrasound. Fredrick L. Thurstone. **45:** 895—1969

Rapid sampling of acoustic holograms by laser-scanning techniques. A Korpel and P. Desmares. **45:** 881—1969

Theoretical investigation of the integrated optical effect produced by sound fields radiated from plane piston transducers. Frank Ingenito and Bill D. Cook. **45:** 572—1969

Abstracts

Influence of ultrasonic vibration on metallic friction. Eckart Lehfeldt. **45:** 334—1969

Information contained in Rayleigh and Brillouin scattering. Raymond D. Mountain. **45:** 310—1969

Light scattering from shear waves in liquids. B. P. Stoicheff and G. I. Stegeman. **45:** 311—1969

Optical farfield polarization analysis for an acoustically birefringent liquid. W. R. Klein, W. A. Riley, and L. Donnell. **45:** 333—1969

Use of time-averaged optical holographic interferometry for visualization of standing acoustic waves. R. R. Salant, W. G. Alwang, L. A. Cavanaugh, and E. Sammartino. **45:** 338—1969

Patents

Apparatus and process for ultrasonically welding a wire to the surface of an object. H. P. C. Daniels and T. P. J. Botden. **45:** 1588—1969

Device for ultrasonically cleaning phonographic records. Richard W. Henes. **45:** 288—1969

Method and apparatus for bonding together two thermoplastic sheets by ultrasonic energy. Eugene E. Hewitt. **45:** 1322—1969

Method and apparatus for cleaning a pipe with sonic energy. Stanley E. Jacke. **45:** 1323—1969

Method and apparatus for splicing materials. Lewis Balamuth, David D. Grimes, Carey A. Evans, Clive S. Axtell, Clifford A. Robertson, and Charles T. Higgins. **45:** 1322—1969

Method for delaminating articles. Edward G. Obeda and Robert L. Armstrong. **45:** 288—1969

Method of bonding filamentary material. Robert W. Helda and William E. La Point. **45:** 288—1969

Methods of severing brittle material along prescribed lines. Garland K. Grechus. **45:** 287—1969

Nondestructive measurement of material strength. Stirling A. Colgate. **45:** 288—1969

Packaging machine. Howard Deans and Vincent Pace. **45:** 1323—1969

Sonic apparatus for wetting metals. Floyd A. Wyczalek. **45:** 823—1969

Sonic distillation process and apparatus. Albert G. Bodine. **45:** 823—1969

Sonic method and apparatus for grinding rock material and the like to powder. Albert G. Bodine. **45:** 1588—1969

Sonic mixing apparatus and method. Ernest E. Lindsey. **45:** 1074—1969

Sonic spray nozzle. Robert S. Soloff. **45:** 1074—1969

Sonic washer. Charles E. Wood. **45:** 1322—1969

Supersonic vibrating drying system. Frank R. Ofner. **45:** 1075—1969

Ultrasonic method for producing phase transitions in materials at high pressures. Wayne D. Wilson. **45:** 1587—1969

Ultrasonic washing. Seymore Goldwasser, Carl W. Haefele, Jr., and Carl Padden. **45:** 288—1969

Ultrasonically vibrated cutting knives. Lewis Balamuth and Arthur Kuris. **45:** 1075—1969

Vibratory welding apparatus and method. Nicholas Maropis and James Byron Jones. **45:** 1587—1969

10.3 Ultrasonic Instruments. (See also 5.18.)

Papers

Effect of multimode guided-wave propagation on ultrasonic phase velocity measurements: problem and remedy. Emmanuel P. Papadakis. **45:** 1547—1969

High-sensitivity logarithmic recorder of ultrasonic attenuation. George P. Anderson and Bruce B. Chick. **45:** 1343—1969

Holographic imaging with ultrasound. Fredrick L. Thurstone. **45:** 895—1969

Image scanner using diode switching. E. E. Suckling and J. R. Hendrickson. **45:** 892—1969

Measurement of ultrasonic attenuation and phase shift in the presence of noise. H. J. McSkimin and T. B. Bateman. **45:** 852—1969

Nearly spherical acoustic lenses. Henry R. Feldman. **45:** 868—1969

Rapid sampling of acoustic holograms by laser-scanning techniques. A Korpel and P. Desmares. **45:** 881—1969

Ultrasonic imaging systems for nondestructive testing. Harold Berger. **45:** 859—1969

Ultrasonic method for determining thermodynamic properties of liquids with results for mercury. J. M. Stallard, I. J. Rosenbaum, and C. M. Davis, Jr. **45:** 583—1969

Ultrasonic technique for determining sound-velocity changes in high-loss materials. James R. Asay, Donald L. Lamberson, and Arthur H. Guenther. **45:** 566—1969

Utilization of the liquid surface levitation effect as a means of ultrasonic image conversion for materials inspection. Otto R. Gericke and Robert C. Grubinskas. **45:** 872—1969

Wave analysis of a Luneberg-Gutman fluid acoustic lens. Gary Lord. **45:** 885—1969

Technical Notes and Research Briefs

Coupling of ultrasonic energy through lapped surfaces: application to high temperatures. H. Spetzler, E. Schreiber, and L. Peselnick. **45:** 520—1969

Coupling of ultrasonic energy through lapped surfaces at high temperature and pressure. Hartmut Spetzler, David Newbigging, and Edward Schreiber. **45:** 1057—1969

Abstracts

Measurement of residual stress with ultrasonic waves. Robert W. Benson and J. Ronald Chapman. **45:** 332—1969

Noise in ultrasonic image converters. H. W. Jones. **45:** 339—1969

Optical means of measurement of Rayleigh wave velocity and attenuation. N. I. Kjosnes, W. W. Lester, and R. R. Whymark. **45:** 346—1969

Pressure derivatives of the elastic constants of lead. D. E. Schuele and R. A. Miller **45:** 334—1969

Some physical properties of single crystals of normal and deuterated cesium dihydrogen arsenate. R. S. Adhav. **45:** 334—1969

Ultrasonic detection of cavitation at catheter tips. F. W. Kremkau, R. Gramiak. E. L. Cartensen, P. M. Shah, and D. H. Kramer. **45:** 340—1969

Ultrasonic measurements beyond 3000°K. M. S. McDonough, L. C. Lynnworth, and E. H. Carnevale. **45:** 334—1969

Use of time-averaged optical holographic interferometry for visualization of standing acoustic waves. R. R. Salant, W. G. Alwang, L. A. Cavanaugh, and E. Sammartino. **45:** 338—1969

Patents

Apparatus for testing tubes or rods by ultrasonics. Maurice David Chattaway and Kenneth Edward Bowen. **45:** 1324—1969

Automatic ultrasonic railroad wheel inspection system. Roy A. Nance and John W. Shull. **45:** 1325—1969

Flowmeter. Alan R. Kahn and Max D. Liston. **45:** 289—1969

High temperature probe. Dan W. Puckett. **45:** 1075—1969

Method and apparatus for forming ultrasonic seals. John G. Attwood and Robert L. Kosrow. **45:** 539—1969

Method and apparatus for generating a high power ultrasonic burst pulse signal. Ben Wade Oakes Dickinson III. **45:** 823—1969

Method and apparatus for generating and applying sonic energy. George B. Greene. **45:** 1324—1969

Method and apparatus for suppressing noise during ultrasonic testing. Siegfried Richard Walter Kaule. **45:** 539—1969

Method and apparatus for testing the pressure tightness of containers. Thomas F. Helms. **45:** 289—1969

Microwave and ultrasonic apparatus. Melvin L. Levinson. **45:** 824—1969

Process and apparatus for treating a continuous length of synthetic textile fabric for the purpose of making the material softer, less glossy and more voluminous. R. Nordmann. **45:** 1588—1969

Resonant vibratory apparatus. Dale Ensminger. **45:** 289—1969

Retaining apparatus for an ultrasonic coupling medium. Richard B. Osgood. **45:** 1590—1969

Signal storage display equipment for ultrasonic testing. Elliott A. Henry. **45:** 1075—1969

Sonic aerosol filtering devices. Harry I. Abboud. **45:** 1075—1969

Sonic analyzer. Fernand Bourquard and Roger Brouee. **45:** 288—1969

Sonic cleaning apparatus for pipes. Fletcher A Benbow and Elvin H. Ryder. **45:** 824—1969

Sonic dishwasher. Fred A. Kochendorffer. **45:** 1075—1969

Sonic scrubbing device. Albert G. Bodine. **45:** 824—1969

Sonic transmitter. William B. Huckabay. **45:** 1590—1969

Transducer for ultrasonic testing of pipe. Peter Kortenhoven. **45:** 1323—1969

Transducer mounting. John Edward Goodmand and Arthur Grange. **45:** 1324—1969

Ultrasonic apparatus for checking processes in liquid media. Oleg Ivanovich Babikov, Boris Ermolaevich Mikhalev, Georgy Sergeevick Pol-Mari, Jury Alexandrovich Lapshin, and Vladimir Anatolievich Magnitdkyl. **45:** 824—1969

Ultrasonic apparatus for detecting flaws. Ben Wade Oakes Dickinson III. **45:** 824—1969

Ultrasonic apparatus for measuring thickness or distances. Jacques Dory. **45:** 1588—1969

Ultrasonic attenuation meter. Philip R. Nute, Steven Serabian, and Frederick Weighart. **45:** 1589—1969

Ultrasonic cleaner controls. Thomas Eaton. **45:** 290—1969

Ultrasonic dental cleaning and treatment device. Leonard G. Martin. **45:** 289—1969

Ultrasonic device for measuring the thickness of objects. Roger Charbonnier and Clement Picot. **45:** 1589—1969

Ultrasonic gauging and control. John A. Spisak. **45:** 538—1969

Ultrasonic inspection. Gerald De G. Cowan. **45:** 1324—1969

Ultrasonic inspection transducer. Robert L. Graham. **45:** 1324—1969

Ultrasonic seam welding apparatus. Lewis Balamuth and Arthus Kuris. **45:** 1075—1969

Ultrasonic signal apparatus. Edward H. Phillips. **45:** 289—1969

Ultrasonic switch for high speed electrical switching. Donald J. Coughenour and William J. Getson. **45:** 539—1969

Ultrasonic system for inspecting submerged piles. Joseph Zemanek, Jr. and Richard L. Caldwell. **45:** 1592—1969

Ultrasonic thickness gauge and flow detector. Frederick Gordon Weighart. **45:** 1589—1969

Ultrasonic transducer scanning system. Edward H. Phillips and Richard B. Osgood. **45:** 539—1969

Ultrasonic treatment apparatus. John J. Carmichael. **45:** 290—1969

Ultrasonic type net weight load indicator for vehicles. Earl C. Nolan. **45:** 1590—1969

Ultrasonic welding apparatus. Reimer Pohlman and Roland Sievers. **45:** 1589—1969

Variable size ultrasonic beam producing transducer. Louis Beaujard and Jacques Mondot. **45:** 1324—1969

Vibration coupling device for an ultrasonic transducer. Johan Battermann and Bernard Froman. **45:** 1325—1969

10.4 Gases, Ultrasonic Velocity, Dispersion, Absorption. (See also 11.3.)

Papers

Sound absorption and velocity in H_2S and CO_2/H_2S mixtures. F. Douglas Shields. **45:** 481—1969

Thermal relaxation in nitrogen with wet carbon dioxide as impurity. M. C. Henderson, K. F. Herzfeld, J. Bry, R. Coakley, and Gaston Carriere. **45:** 109—1969

Letters to the Editor

Vibrational relaxation of oxygen by methane. L. B. Evans and T. G. Winter. **45:** 515—1969

Abstracts

Sound-velocity studies of carbon dioxide in the critical region. E. F. Carome, S. P. Singal, and G. T. Feke. **45:** 318—1969

10.5 Liquids, Ultrasonic Velocity, Dispersion, Absorption. (See also 13.2 and 13.3.)

Papers

Acoustic pulse distortion in thermally relaxing liquids. Richard Barakat and Elizabeth Baumann. **45:** 1234—1969

Acoustically induced optical anisotropy in liquids. Ward A. Riley and W. Richard Klein. **45:** 578—1969

Echo phase-comparison technique and measurement of sound velocity in water. R. C. Williamson. **45:** 1251—1969

Measurement of ultrasonic attenuation and phase shift in the presence of noise. H. J. McSkimin and T. B. Bateman. **45:** 852—1969

Ultrasonic method for determining thermodynamic properties of liquids with results for mercury. J. M. Stallard, I. J. Rosenbaum, and C. M. Davis, Jr. **45:** 583—1969

Letters to the Editor

Critical-angle reflectivity. F. L. Becker and R. L. Richardson. **45:** 793—1969

Detection of cavities produced in a liquid by ionizing particles. P. Marietti, D. Sette, and F. Wanderlingh. **45:** 515—1969

Abstracts

Approach to the dynamics of liquids by far-infrared spectroscopy. E. Whalley. **45:** 310—1969

Dips in sound-velocity dispersion curves for relaxing liquids. William H. Nichols. **45:** 318—1969

Effect of finite size on superfluidity; third sound. I. Rudnick, J. C. Fraser, and R. Kagiwada. **45:** 303—1969

Effects of details of dynamics on dc transport coefficients in solution. Stewart M. Harris and Harold L. Friedman. **45:** 325—1969

Electronic excited states of liquids. Stuart A. Rice. **45:** 298—1969

Equation of state of water and seawater. F. H. Fisher and O. E. Dial, Jr. **45:** 325—1969

Experimental investigation at 60 kHz of the azimuthal dependence of sea surface backscattered sound. J. C. Reeves. **45:** 307—1969

Experimental study of the scattering of sound. J. F. Dill, D. Perez, and J. L. Hunter. **45:** 318—1969

Information contained in Rayleigh and Brillouin scattering. Raymond D. Mountain. **45:** 310—1969

Ionic translation in molten salts. A. F. M. Barton, J. E. Bannard, and G. J. Hills. **45:** 325—1969

Light scattering from shear waves in liquids. B. P. Stoicheff and G. I. Stegeman. **45:** 311—1969

Magneto-acoustic interaction in mercury. Thomas D. Sachs and Gregory P. Hughes. **45:** 318—1969

Measurements of ultrasonic absorption in several liquids in the 1-GHz region. J. F. Dill, L. Mole, P. Derdul, and J. L. Hunter. **45:** 318—1969

Neutron-scattering investigation of the dynamics of H_2O molecules in ionic solutions. G. J. Safford, P. S. Leung, A. W. Naumann, and P. C. Schaffer. **45:** 304—1969

Optical farfield polarization analysis for an acoustically birefringent liquid. W. R. Klein, W. A. Riley, and L. Donnell. **45:** 333—1969

Quantitative evaluation of the Zwanzig equation. D. F. Evans. **45:** 326—1969

Raman spectral investigations of water structure. G. E. Walrafen. **45:** 304—1969

Reflection of ultrasonic waves: phase shift, lateral beam displacement, and surface waves. A. L. Van Buren. **45:** 341—1969

Relaxation phenomena in electrolytic solutions. K. Fritsch, J. L. Hunter, J. F. Dill, C. J. Montrose, and T. A. Litovitz. **45:** 325—1969

Relaxation spectroscopy of liquids. Theodore Litovitz. **45:** 298—1969

Significant-structure theory of dynamic liquid properties. Henry Eyring and Mu Shik Jhon. **45:** 298—1969

Some relationships between solid and liquid structure as exemplified by water. Barclay Kamb. **45:** 324—1969

Study of liquid dynamics by neutron scattering. P. Schofield. **45:** 304—1969

Transient effects in the propagation of a sound pulse in a viscous liquid. Mark B. Moffett and Robert T. Beyer. **45:** 333—1969

Translational and rotational motion of small molecules in liquid argon. George E. Ewing, Gerald W. Holleman, and Donald E. Muller. **45:** 317—1969

Ultrasonic attenuation in liquid argon, nitrogen, and oxygen at 1 GHz. J. S. Imai and R. W. Leonard. **45:** 317—1969

Ultrasonic attenuation in liquid hellium above 1°K at 1 GHz. J. S. Imai and I. Rudnick. **45:** 317—1969

Ultrasonic relaxation and diffusion-controlled processes in electrolytic solutions. Ernest Yeager and Louis Goldfarb. **45:** 326—1969

Ultrasonic relaxation in a simple organic glass. W. M. Slie. **45:** 318—1969

Ultrasonic relaxation in normal propyl alcohol-water mixtures. W. M. Madigosky. **45:** 318—1969

10.6 Solids, Ultrasonic Velocity, Dispersion, Absorption

Papers

Character of pseudo surface waves on anisotropic crystals. T. C. Lim and G. W. Farnell. **45:** 845—1969

Dislocation contribution to ultrasonic attenuation in zinc crystals as function of orientation, irradiation, plastic deformation and recovery. D. Lenz, K. Lücke, A. Ostermann, and W. A. Sibley. **45:** 1374—1969

Effect of large-amplitude static and dynamic stress on the mechanical loss of lead zirconate titanate transducer ceramic. Roy R. Whymark and Kenneth J. Triebes. **45:** 587—1969

Effect of multimode guided-wave propagation on ultrasonic phase velocity measurements: problem and remedy. Emmanuel P. Papadakis. **45:** 1532—1969

Elastic constants of composite materials. Ernst Behrens. **45:** 102—1969

Elastic wave propagations and acoustical birefringence in stressed crystals. Tatsuo Tokuoka and Masakatsu Saito. **45:** 1241—1969

Electromagnetic generation of ultrasonic waves in metals. D. J. Meredith, R. J. Watts-Tobin, and E. Roland Dobbs. **45:** 1393—1969

Light-wave/elastic-wave analogies in crystals. Edmund G. Henneke II and Robert E. Green, Jr. **45:** 1367—1969

Measurement of ultrasonic attenuation and phase shift in the presence of noise. H. J. McSkimin and T. B. Bateman. **45:** 852—1969

Reaction paths and activation energies for dislocation unpinning. L. J. Teutonico, K. Lücke, F. Heuser, and A. V. Granato. **45:** 1402—1969

Thermal and electronic attenuations and dislocation drag in the hexagonal crystal cadmium. Warren P. Mason and Arthur Rosenberg. **45:** 470—1969

Ultrasonic attenuation at microwave frequencies in aluminum oxide and ruby. S. L. McBride, H. J. Maris, and R. Truell. **45:** 1385—1969

Ultrasonic attenuation in ZnO. L. T. Claiborne, R. B. Hemphill, and N. G. Einspruch. **45:** 1352—1969

Ultrasonic determination of the diffusion coefficient of carbon in iron at 408° and 430°C. A. E. Lord, Jr. **45:** 1382—1969

Ultrasonic technique for determining sound-velocity changes in high-loss materials. James R. Asay, Donald L. Lamberson, and Arthur H. Guenther. **45:** 566—1969

Viscous drag on dislocations in LiF and NaCl. F. Fanti, J. Holder, and A. V. Granato. **45:** 1356—1969

Letters to the Editor

Elastic constants of filamentary composites with hexagonal symmetry. Ernst Behrens. **45:** 1567—1969

Abstracts

Effect of multimode guided wave propagation on ultrasonic phase velocity measurements: problem and remedy. Emmanuel P. Papadakis. **45:** 341—1969

Influence of ultrasonic vibration on metallic friction. Eckart Lehfeldt. **45:** 334—1969

Low-temperature ultrasonic-attenuation measurements in Cs. John A. Murphy and J. Trivisonno. **45:** 334—1969

Measurement of residual stress with ultrasonic waves. Robert W. Benson and J. Ronald Chapman. **45:** 332—1969

Optical means of measurement of Rayleigh wave velocity and attenuation. N. I. Kjosnes, W. W. Lester, and R. R. Whymark. **45:** 346—1969

Phonon-phonon interaction. V. A. Krasilnikov. **45:** 333—1969

Pressure derivatives of the elastic constants of lead. D. E. Schuele and R. A. Miller. **45:** 334—1969

Rayleigh wave dispersion in layered media. W. E. Lawrie. **45:** 334—1969

Some physical properties of single crystals of normal and deuterated cesium dihydrogen arsenate. R. S. Adhav. **45:** 334—1969

Temperature dependence of ultrasonic harmonic generation in copper single crystals. R. D. Peters and M. A. Breazeale. **45:** 334—1969

Ultrasonic measurements beyond 3000°K. M. S. McDonough, L. C. Lynnworth, and E. H. Carnevale. **45:** 334—1969

10.9 Biological Effects of Ultrasonic Waves

Papers

Breakage of tobacco mosaic virus by acoustic transients: a hydrodynamical model. Philip E. Hamrick and Stephen F. Cleary. **45:** 1—1969

Abstracts

Ultrasonic vocal output in CBA/J infants and their effect on adult laboratory mice. Charles I. Berlin, Deborah Majeau, P. S. Soileau, M. Palestrant, and Sylvia Steiner. **45:** 299—1969

Errata

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10.10 Ultrasonic Relaxation Processes in Solids, Liquids, and Gases

Papers

Acoustic pulse distortion in thermally relaxing liquids. Richard Barakat and Elizabeth Baumann. **45:** 1234—1969

Sound absorption and velocity in H_2S and CO_2/H_2S mixtures. F. Douglas Shields. **45:** 481—1969

Thermal relaxation in nitrogen with wet carbon dioxide as impurity. M. C. Henderson, K. F. Herzfeld, J. Bry, R. Coakley, and Gaston Carriere. **45:** 109—1969

Letters to the Editor

Vibrational relaxation of oxygen by methane. L. B. Evans and T. G. Winter. **45:** 515—1969

Abstracts

Approach to the dynamics of liquids by far-infrared spectroscopy. E. Whalley. **45:** 310—1969

Dips in sound-velocity dispersion curves for relaxing liquids. William H. Nichols. **45:** 318—1969

Effects of details of dynamics on dc transport coefficients in solution. Stewart M. Harris and Harold L. Friedman. **45:** 325—1969

Ionic translation in molten salts. A. F. M. Barton, J. E. Bannard, and G. J. Hills. **45:** 325—1969

Magneto-acoustic interaction in mercury. Thomas D. Sachs and Gregory P. Hughes. **45:** 318—1969

Neutron-scattering investigation of the dynamics of H_2O molecules in ionic solutions. G. J. Safford, P. S. Leung, A. W. Naumann, and P. C. Schaffer. **45:** 304—1969

Raman spectral investigations of water structure. G. E. Walrafen. **45:** 304—1969

Relaxation phenomena in electrolytic solutions. K. Fritsch, J. L. Hunter, J. F. Dill, C. J. Montrose, and T. A. Litovitz. **45:** 325—1969

Relaxation spectroscopy of liquids. Theodore Litovitz. **45:** 298—1969

Study of liquid dynamics by neutron scattering. P. Schofield. **45:** 304—1969

Ultrasonic relaxation and diffusion-controlled processes in electrolytic solutions. Ernest Yeager and Louis Goldfarb. **45:** 326—1969

Ultrasonic relaxation in a simple organic glass. W. M. Slie. **45:** 318—1969

Ultrasonic relaxation in normal propyl alcohol-water mixtures. W. M. Madigosky. **45:** 318—1969

11 RADIATION AND SCATTERING

11.1 General, Unclassified

Book Reviews

Physics of Vibrations and Waves, The. H. J. Pain. (Reviewed by F. B. Stumpf.) **45:** 1583—1969

11.1.5 Analogies

Papers

Light-wave/elastic-wave analogies in crystals. Edmund G. Henneke II and Robert E. Green, Jr. **45:** 1367—1969

Lumped-element transmission-line analog of sound in a viscous medium. Thomas L. Szabo. **45:** 124—1969

Abstracts

Instrumentation for acoustic modeling. B. G. Watters. **45:** 303—1969

Model techniques in architectural acoustics. Paul S. Veneklasen. **45:** 303—1969

11.2 Reflection, Refraction, Diffraction, and Interference of Sound Waves

Papers

Acoustic pulses scattered by a rigid sphere immersed in a fluid. Anthony J. Rudgers. **45:** 900—1969

Coherence of acoustic signals reradiated from the time-varying surface of the ocean. B. E. Parkins. **45:** 119—1969

Continuous and discrete inverse-scattering problems in a stratified elastic medium. I. Plane waves at normal incidence. Jerry A. Ware and Keiiti Aki. **45:** 911—1969

Direct experimental verification of creeping waves. M. L. Harbold and B. N. Steinberg. **45:** 592—1969

Lumped-element transmission-line analog of sound in a viscous medium. Thomas L. Szabo. **45:** 124—1969

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One-dimensional wave propagation through a short discontinuity. Vernal H. Kenner and Werner Goldsmith. **45:** 115—1969

Reflection of plane waves from the flat boundary of a micropolar elastic half space. V. R. Parfitt and A. C. Eringen. **45:** 1258—1969

Transient interaction of plane acoustic waves with a spherical elastic shell. H. Huang. **45:** 661—1969

Letters to the Editor

Bistatic measurements of acoustic waves scattered from a statistically rough, known surface. W. D. Boles, A. K. Fung, and R. K. Moore. **45:** 1040—1969

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On sound-transmission anomalies in the atmosphere. Uno Ingard. **45:** 1038—1969

Abstracts

Computer studies of the properties of sound fields in a reverberation chamber. G. C. Maling, Jr. **45:** 337—1969

Degradation of detectability of passive signals due to surface scattering. John F. McDonald. **45:** 294—1969

Effects of attenuation on the Rayleigh critical angle reflection factor. F. L. Becker. **45:** 341—1969

Information contained in Rayleigh and Brillouin scattering. Raymond D. Mountain. **45:** 310—1969

Light scattering from shear waves in liquids. B. P. Stoicheff and G. I. Stegeman. **45:** 311—1969

On the transmission of plane waves through layered linear viscoelastic media. Richard Shaw and Paul Bugl. **45:** 333—1969

Phase variation of the acoustic field along a ray. A. J. Friedman. **45:** 306—1969

Reflection of ultrasonic waves: phase shift, lateral beam displacement, and surface waves. A. L. Van Buren. **45:** 341—1969

Transmission and reflection of sound by plates submerged in water. Walter M. Barss. **45:** 341—1969

11.3 Velocity and Attenuation of Sound Waves. (See also 10.4, 10.5, 10.6, 13.2, and 13.3.)

Papers

Acoustic pulses scattered by a rigid sphere immersed in a fluid. Anthony J. Rudgers. **45:** 900—1969

Direct experimental verification of creeping waves. M. L. Harbold and B. N. Steinberg. **45:** 592—1969

Elastic constants of composite materials. Ernst Behrens. **45:** 102—1969

Rayleigh waves on curved surfaces. Benjamin Rulf. **45:** 493—1969

Stress waves in nonhomogeneous elastic rods. Damoder P. Reddy. **45:** 1273—1969

Letters to the Editor

Applicability of amplitude detection for measuring the acoustic velocity of confined gases. J. L. Lewis, D. E. Nierode, R. A. Gaggioli, and I. C. Romer, Jr. **45:** 1037—1969

Comments concerning the determination of absolute sound speeds in distilled and seawater and Pacific Sofar speeds. J. R. Lovett. **45:** 1051—1969

Elastic constants of filamentary composites with hexagonal symmetry. Ernst Behrens. **45:** 1567—1969

Velocity dispersion of isotropic rods of square cross section vibrating in the lowest-order longitudinal mode. R. E. Booker. **45:** 1284—1969

Abstracts

Ducting approach to atmospheric sound propagation. Robert C. Polly. **45:** 344—1969

Effects of attenuation on the Rayleigh critical angle reflection factor. F. L. Becker. **45:** 341—1969

Rayleigh wave dispersion in layered media. W. E. Lawrie. **45:** 334—1969

Reflection of ultrasonic waves: phase shift, lateral beam displacement, and surface waves. A. L. Van Buren. **45:** 341—1969

Sound transmission in a fluid-filled duct with transverse resistivity. E. A. G. Shaw. **45:** 340—1969

Thermoviscous attenuation of sound traveling parallel to a rigid, impermeable wall. David T. Blackstock. **45:** 340—1969

11.4 Waves in Bounded Media

Papers

Asymptotic solution for the sound field in shallow water with a negative velocity gradient. R. N. Denham. **45:** 365—1969

Character of pseudo surface waves on anisotropic crystals. T. C. Lim and G. W. Farnell. **45:** 845—1969

Coupling through small apertures, with an application to Helmholtz' resonator. J. Van Bladel. **45:** 604—1969

Covariance between acoustic signals traveling diverging paths in a random medium. William J. Sederowitz and Andrew G. Favret. **45:** 386—1969

On the effects of stochastic boundary perturbations on acoustic wave propagation—the theory. Dimitri S. Bugnolo. **45:** 1560—1969

One-dimensional wave propagation through a short discontinuity. Vernal H. Kenner and Werner Goldsmith. **45:** 115—1969

Rayleigh waves on curved surfaces. Benjamin Rulf. **45:** 493—1969

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Letters to the Editor

Surface-coupled losses in surface sound channel propagation. H. M. Schulkin. **45:** 1054—1969

Abstracts

Dispersion of flexural waves in circular, bimaterial cylinders—theoretical treatment. Robert C. Reuter, Jr. **45:** 335—1969

Effect of multimode guided wave propagation on ultrasonic phase velocity measurements: problem and remedy. Emmanuel P. Papadakis. **45:** 341—1969

Normal modes for a translating open-ended cylindrical cavity. Bernard Brown and Louis F. Libelo, Jr. **45:** 335—1969

Reflection of ultrasonic waves: phase shift, lateral beam displacement, and surface waves. A. L. Van Buren. **45:** 341—1969

Some aspects of the theory of diffusion and diffusers. P. E. Doak and S. D. Dodd. **45:** 338—1969

Sound transmission in a fluid-filled duct with transverse resistivity. E. A. G. Shaw. **45:** 340—1969

11.5 **Radiation from Vibrating Objects in Air and Other Gases. Acoustic Impedance. Source of Sound. (See also 5.3, 12.3z, and 13.7.)**

Papers

Calculation of the field of a baffled array by the geometrical theory of diffraction. D. L. Hutchins and R. G. Kouyoumjian. **45:** 485—1969

Coupling through small apertures, with an application to Helmholtz' resonator. J. Van Bladel. **45:** 604—1069

Letters to the Editor

Comments on "Numerical evaluation of the radiation impedance for a piston in a nonrigid baffle" [D. Feit and M. E. Duncan, J. Acoust. Soc. Amer. **43,** 885–886(L) (1968)]. Visvaldis Mangulis. **45:** 1045—1969

Operational method for evaluating the farfield radiation from plane boundaries. G. Maidanik. **45:** 1044—1969

Abstracts

Coupling of finite sized sources to a modal reverberant sound field. Kenneth McK. Eldred, Ben H. Sharp, and Fancher M. Murray. **45:** 338—1969

Device for the measurement of acoustic impedance in air. Janet A. L. Rudolph and E. L. Hixson. **45:** 331—1969

Diffuseness in reverberation rooms. Theodore J. Schultz. **45:** 337—1969

Experimental evaluation of moving sound diffusers for reverberation rooms. Charles Ebbing. **45:** 343—1969

Farfield prediction from nearfield crosspower measurements. John L. Butler. **45:** 338—1969

Method of measuring the acoustical impedance. Josef Merhaut. **45:** 331—1969

Normal modes for a translating open-ended cylindrical cavity. Bernard Brown and Louis F. Libelo, Jr. **45:** 335—1969

Response analysis of a rigid piston in an infinite baffle excited by a random force. Charles J. Runkle and Franklin D. Hart. **45:** 341—1969

11.6 **Wave Propagation in Tubes**

Papers

One-dimensional wave propagation through a short discontinuity. Vernal H. Kenner and Werner Goldsmith. **45:** 115—1969

Abstracts

Limits of validity of a perturbation solution for a finite-amplitude standing wave confined to a duct. Alan B. Coppens and J. V. Sanders. **45:** 340—1969

On the propagation of sound waves in an axisymmetric viscous flow bounded by an elastic cylindrical duct. G. M. Rentzepis, and J. W. Vogel. **45:** 340—1969

Sound transmission in a fluid-filled duct with transverse resistivity. E. A. G. Sahw. **45:** 340—1969

11.7 **Mathematical Theory of Wave Propagation. Ray Acoustics. (See also 11.1.5.)**

Papers

Acoustic pulses scattered by a rigid sphere immersed in a fluid. Anthony J. Rudgers. **45:** 900—1969

Asymptotic solution for the sound field in shallow water with a negative velocity gradient. R. N. Denham. **45:** 365—1969

Calculation of the field of a baffled array by the geometrical theory of diffraction. D. L. Hutchins and R. G. Kouyoumjian. **45:** 485—1969

Character of pseudo surface waves on anisotropic crystals. T. C. Lim and G. W. Farnell. **45:** 845—1969

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Continuous and discrete inverse-scattering problems in a stratified elastic medium. I. Plane waves at normal incidence. Jerry A. Ware and Keiiti Aki. **45:** 911—1969

Coupling through small apertures, with an application to Helmholtz' resonator. J. Van Bladel. **45:** 604—1969

Definition of a linear medium for one-dimensional longitudinal motion. R. N. Thurston. **45:** 1329—1969

Effect of edge vibrations on the propagation of a strain transient. J. J. McCoy. **45:** 1104—1969

Elastic constants of composite materials. Ernst Behrens. **45:** 102—1969

Impact on an elastic quarter space. T. W. Wright. **45:** 935—1969

Intensity equations in ray acoustics. I. Peter Ugin̆čius. **45:** 193—1969

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Lumped-element transmission-line analog of sound in a viscous medium. Thomas L. Szabo. **45:** 124—1969

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Radiation characteristics of spherically symmetric, perfect focusing acoustic lenses. C. A. Boyles. **45:** 351—1969

Rayleigh waves on curved surfaces. Benjamin Rulf. **45:** 493—1969

Reflection of plane waves from the flat boundary of a micropolar elastic half space. V. R. Parfitt and A. C. Eringen. **45:** 1258—1969

Stress waves in nonhomogeneous elastic rods. Damoder P. Reddy. **45:** 1273—1969

Theory of the axial ray. Melvin A. Pedersen. **45:** 157—1969

Wave theory of an acoustic Luneburg Lens. II. The theory of variable density lenses. C. A. Boyles. **45:** 356—1969

Waves on a spherical shell. Michael P. Mortell. **45:** 144—1969

Letters to the Editor

Acoustic ray tracing in a layered atmosphere: an analog approach. R. S. Davis, Jr. and M. E. Austin. **45:** 242—1969

Damping of a rectangular stress pulse in a thin elastic rod by external Coulomb friction. E. V. Wilms. **45:** 1049—1969

Elastic constants of filamentary composites with hexagonal symmetry. Ernst Behrens. **45:** 1567—1969

Operational method for evaluating the farfield radiation from plane boundaries. G. Maidanik. **45:** 1044—1969

Abstracts

Acoustic wave scattering and transmission by corrugated surfaces. Peter A. Barakos. **45:** 307—1969

Phase variation of the acoustic field along a ray. A. J. Friedman. **45:** 306—1969

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11.8 Physical Effects of Sound. (See also 12.11.)

Papers

Radiation pressure on a vibrating hemispherical meniscus. Wesley L. Nyborg and James A. Rooney. **45:** 384—1969

11.9 Sounds in the Atmosphere

Letters to the Editor

Acoustic ray tracing in a layered atmosphere: an analog approach. R. S. Davis, Jr. and M. E. Austin. **45:** 242—1969

On the sound-transmission anomalies in the atmosphere. Uno Ingard. **45:** 1038—1969

Abstracts

Atmosphere effects on sonic-boom overpressures. Allan D. Pierce and Charles L. Thomas. **45:** 344—1969

Ducting approach to atmospheric sound propagation. Robert C. Polly. **45:** 344—1969

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12 MECHANICAL VIBRATION AND SHOCK (See also 5., 11., and 16.)

12.1 General, Unclassified

Letters to the Editor

Simple and Complex Vibratory Systems. Eugen Skudrzyk. (Reviewed by Richard H. Lyon.) **45:** 1068—1969

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Physics of Vibrations and Waves, The. H. J. Pain. (Reviewed by F. B. Stumpf.) **45:** 1583—1969

News

Meeting on sonically Induced Vibration of Structure, Liverpool, 6–7 January 1969. **45:** 1296—1969

1969 Vibration Conference. **45:** 1065—1969

12.3 Instruments and Apparatus Relating to Vibration and Shock. (See also 5.3, 5.4, 5.9, and 5.21.)

Papers

Analytical and experimental studies of multiple-unit impact dampers. S. F. Masri. **45:** 1111—1969

Impacting oscillatory devices. G. N. Bycroft. **45:** 131—1969

Instrumentation for 80-Hz seismic communications. K. Ikrath, W. A. Schneider, R. F. Johnson, and K. J. Murphy. **45:** 621—1969

Piezoelectric shakers for wide-frequency calibration of vibration pickups. E. Jones, W. B. Yelon, and S. Edelman. **45:** 1556—1969

12.3i Vibration Isolators, Attenuators, and Dampers. (See also 2.11 and 5.21.)

Abstracts

Accuracy requirements for damping estimation in the calculation of resonant response of complex structures. Harry Himelblau. **45:** 320—1969

Damping definitions and classifications. Robert Plunkett. **45:** 319—1969

Damping in built-up structures. Eric E. Ungar. **45:** 319—1969

Damping nonlinearities and transient inputs. R. R. Reed. **45:** 328—1969

Engineering aspects of material damping and structural damping measurements. C. S. Chang. **45:** 328—1969

Fatigue evaluation of noise-suppression materials. D. H. Scott. **45:** 329—1969
Material damping. D. I. G. Jones. **45:** 319—1969
Vibration isolation of pressure transducers for determination of acoustic environment. S. V. Paranjape and E. Simon. **45:** 346—1969

Patents

Damping means. Lionel Haworth. **45:** 1076—1969
Holding device for vibrators. Karl Axel Sam Karlstrom and Karl Gustaf Ostberg. **45:** 1076—1969
Missile vibration dampener and support. Myron J. Bauer, Garold A. Kane, Milton C. Neuman, and John S. Scheurich. **45:** 1592—1969
Noise-controlling armature for brakes, clutches and the like. Bernard E. Wrensch and Lloyd A. Fitzgerald. **45:** 1076—1969
Noise deadening means for percussive tools. Karl Staffan Alm. **45:** 540—1969
Silencer device for hydraulic jacks. Ernest A. Hall. **45:** 540—1969

12.3p Vibration Pickups and Indicators. Calibration Equipment and Techniques. (See also 5.9, 5.18, and 13.11t.)

Papers

Piezoelectric shakers for wide-frequency calibration of vibration pickups. E. Jones, W. B. Yelon, and S. Edelman. **45:** 1556—1969

Patents

Accelerometer. Charles H. Waldhouer, Jr. **45:** 1325—1969
Accelerometer. Roger C. Wickenden. **45:** 1325—1969
Amplitude damped transducer. Shmuel Elazar. **45:** 290—1969
Bottle inspection method and apparatus. Theodore C. Baker, Benny B. Mathias, and James R. Sager. **45:** 825—1969
Digital force transducer. Norman J. Appleton. **45:** 825—1969
Dynamic displacement transducer. Jay R. Reed. **45:** 290—1969
Electromechanical transducer utilizing poisson ratio effects. Bernard A. Shoor and Dale R. Burger. **45:** 825—1969
Electronic sound detector. John H. Harshbarger. **45:** 291—1969
Linear mercury accelerometer. Hugh E. Riordan. **45:** 1325—1969
Low frequency inertia-type pickup. Sylvester Karpchuk. **45:** 1591—1969
Non-contacting displacement gauge having a feedback means for controlling the vibration amplitude of the probe. George B. Foster, Kenneth A. Ostrander, and Hall Cary. **45:** 291—1969
Piezoelectric generator unit for space vehicles. Jack Brothers. **45:** 540—1969
Piezoelectric transducer system. Eugene Agalides and Leslie C. Stewart. **45:** 825—1969
Polar accelerometer. Sidney Lees. **45:** 825—1969
Resonant frequency vibration testing method and apparatus. Donald Lloyd. **45:** 825—1969
Telemetric accelerometer. David C. T. Shang. **45:** 290—1969
Transducer driver. Paul D. Neitz. **45:** 825—1969
Tuning fork digital accelerometer. Hamilton Southworth, Jr. and John C. Stiles. **45:** 1591—1969
Vibrating string transducer devices and systems employing same. Paul J. Holmes. **45:** 1591—1969
Vibration transducer. Robert E. Talmo. **45:** 1325—1969
Vibratory dynamic force meter. Walter P. Christoph. **45:** 1590—1969

12.3v Vibration Generators. Shake Tables. (See also 5.21.)

Papers

Piezoelectric shakers for wide-frequency calibration of vibration pickups. E. Jones, W. B. Yelon, and S. Edelman. **45:** 1556—1969

Patents

Acoustical impedance transformer for coupling sonic energy to the earth. Albert G. Bodine. **45:** 540—1969
Fluid-sonic pile driving. Kenneth A. Blenkarn and Arthur Lubinski. **45:** 540—1969
Sonic apparatus for material separation. Albert G. Bodine, Jr. **45:** 1076—1969
Sonic materials separation apparatus. Albert G. Bodine, Jr. **45:** 1076—1969
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Vibrator assembly. Allan E. Heinrich. **45:** 826—1969

12.3z Mechanical-Impedance Measurement. (See also 5.3 and 11.5.)

Letters to the Editor

Evaluation of the input impedance of a reinforced plastic plate. Ronald L. Bannister. **45:** 1570—1969

12.5 Shock. (See also 14.2 and 13.10.)

Papers

Analytical and experimental studies of multiple-unit impact dampers. S. F. Masri. **45:** 1111—1969

Abstracts

Some interrelated acoustics and aerodynamics of transonic shock-boundary-layer unsteadiness. E. J. Luksus, J. T. Huang, and V. C. Stevens. **45:** 329—1969

12.7 Theory of Vibrating Systems. (See also 11.7 and 11.1.5.)

Papers

Analytical and experimental studies of multiple-unit impact dampers. S. F. Masri. **45:** 1111—1969
Definition of a linear medium for one-dimensional longitudinal motion. R. N. Thurston. **45:** 1329—1969
Effect of edge vibrations on the propagation of a strain transient. J. J. McCoy. **45:** 1104—1969
Effects of a surrounding fluid on the free, axisymmetric vibrations of thin elastic spherical shells. David A. Sonstegard. **45:** 506—1969
Finite transform solution of the vibrating beam with ends elastically restrained. George R. Sharp and M. H. Cobble. **45:** 654—1969
Free vibrations of an infinite plate based on the linear coupled theory of thermoelasticity. D. F. Mowbray and G. L. Anderson. **45:** 646—1969

Free vibrations of thin orthotropic oblate spheroidal shells. Leslie E. Penzes. **45:** 500—1969

High-frequency response of point-excited submerged, spherical shells. M. C. Junger and D. Feit. **45:** 630—1969

Impact on an elastic quarter space. T. W. Wright. **45:** 935—1969

Impacting oscillatory devices. G. N. Bycroft. **45:** 131—1969

Large-amplitude damped free vibration of a stretched string. G. V. Anand. **45:** 1089—1969

Shear–flexure–twist vibrations in rectangular *AT*-cut quartz plates with partial electrodes. P. C. Y. Lee and W. J. Spencer. **45:** 637—1969

Some simple modes of wave propagation in an infinite piezoelectric plate. Jeffrey L. Bleustein. **45:** 614—1969

Statistical analysis of power injection and response in structures and rooms. R. H. Lyon. **45:** 545—1969

Thickness–twist vibrations in beveled *AT*-cut quartz plates. G. T. Pearman. **45:** 928—1969

Turbulent-flow-excited vibration of a simply supported, rectangular flat plate. Wayne A. Strawderman and Ronald S. Brand. **45:** 177—1969

Vibrational and stability characteristics of circular membranes subjected to gryoscopically induced inertia loads. P. G. Kessel and A. L. Schlack, Jr. **45:** 922—1969

Vibrations of circular cylindrical shells due to gyroscopically induced inertia loads. P. G. Kessel and A. L. Schlack, Jr. **45:** 138—1969

Waves on a spherical shell. Michael P. Mortell. **45:** 144—1969

Letters to the Editor

Comments on "Bending frequencies on compressed beams" [A. E. Galef, J. Acoust. Soc. Amer. **44,** 643(L) (1968)]. C. L. Amba-Rao. **45:** 1284—1969

Comments on "Natural frequencies and modes of skew membranes" [S. Durvasula, J. Acoust. Soc. Amer. **44,** 1636–1646 (1968)]. P. A. Laura. **45:** 1281—1969

Damping of a rectangular stress pulse in a thin elastic rod by external Coulomb friction. E. V. Wilms. **45:** 1049—1969

Frequencies of a hanging chain. Tseng Huang and D. W. Dareing. **45:** 1046—1969

Velocity dispersion of isotropic rods of square cross section vibrating in the lowest-order longitudinal mode. R. E. Booker. **45:** 1284—1969

Abstracts

Accuracy requirements for damping estimation in the calculation of resonant response of complex structures. Harry Himelblau. **45:** 320—1969

Dispersion of flexural waves in circular, bimaterial cylinders—theoretical treatment. Robert C. Reuter, Jr. **45:** 335—1969

Eigenvalue density of conical shells. David K. Miller and Franklin D. Hart. **45:** 329—1969

Normal modes for a translating open-ended cylindrical cavity. Bernard Brown and Louis F. Libelo, Jr. **45:** 335—1969

Vibrations of ring-and-stringer-stiffened conical shells. O. E. Crenwelge, Jr. and D. Muster. **45:** 329—1969

12.10 Seismology. Geophysical Prospecting. Seismographs

Papers

Instrumentation for 80-Hz seismic communications. K. Ikrath, W. A. Schneider, R. F. Johnson, and K. J. Murphy. **45:** 621—1969

Abstracts

On the transmission of plane waves through layered linear viscoelastic media. Richard Shaw and Paul Bugl. **45:** 333—1969

Patents

Acoustic method and apparatus for examining formation adjacent the walls of boreholes. Louis Henry. **45:** 542—1969

Acoustical impedance transformer for coupling sonic energy to the earth. Albert G. Bodine. **45:** 543—1969

Acoustical signal generator. Bruce F. Wiley. **45:** 543—1969

Acoustical well logging tool. Joseph Zemanek, Jr., and Andrew J. D. Straus. **45:** 543—1969

Acoustic well logging tool and method. Joseph Zemanek, Jr. **45:** 543—1969

Ambient seismic noise elimination using horizontal component energy. Robert B. Roden. **45:** 541—1969

Beat frequency sonic technique and apparatus for use in seismic surveys. Albert G. Bodine, Jr. **45:** 1326—1969

Borehole surveying apparatus with complementary rotation of paired transducers. Louis Henry. **45:** 1592—1969

Carrier and positioning mechanism for a seismic energy source. Herbert Dightman, Edward Phillip Shear, and Carl Edmond Steele. **45:** 542—1969

Centroid spaced seismic transducer array. Eugene K. Lee and Clyde W. Kerns. **45:** 541—1969

Close subsurface seismic profiling system. Theodore S. Green. **45:** 541—1969

Continuous wave marine seismic exploration. Milo M. Backus and Buford M. Baker. **45:** 1592—1969

Deactivating system in seismic prospecting. Carl A. Willner. **45:** 543—1969

Digital remote firing system. John David Patterson. **45:** 1326—1969

Gas exploder apparatus for propagating seismic waves. Lauren G. Kilmer. **45:** 542—1969

Gas exploder apparatus for propagating seismic waves. Lauren G. Kilmer and Phil W. Wise. **45:** 542—1969

Magnetic tape recording methods and apparatus for well logging. William J. Sloughter. **45:** 541—1969

Marine seismic cable support system. John J. Babb. **45:** 1592—1969

Method and apparatus for cement logging of cased boreholes. Judson Bruce Synnott III. **45:** 542—1969

Method and apparatus for compiling an *F-K* plot of a seismic record. Pierre L. Goupillaud and Jerry A. Ware. **45:** 541—1969

Method for logging cased boreholes. Frank P. Kokesh. **45:** 542—1969

Method of moving a seismic cable in unnavigable waters. Erwin C. Brede. **45:** 1326—1969

Method of processing geophysical data with stable inverse filters. Clyde W. Kerns. **45:** 541—1969

Method of seismic prospecting. John Bemrose. **45:** 543—1969

Offshore seismic streamer depth control system. John S. Evans, Jr. **45**: 1592—1969
Pneumatic seismic source. George B. Loper. **45**: 541—1969
Recording elastic waves with varying travel times. Neil R. Sparks. **45**: 540—1969
Remote switching circuit for seismometers. Thorwald J. Tvedt. **45**: 1326—1969
Seismic firing and recording system. Orin C. Montgomery and William N. Doggett. **45**: 541—1969
Seismic survey interconnection system. Lawrence R. DeBell. **45**: 1326—1969
Seismic wave generator. Charles A. Tabor. **45**: 542—1969
Seismic wave generator with venting valve. Lauren G. Kilmer. **45**: 1592—1969
Seismic wave source for use at marine locations. Adelbert Barry, Franklin L. Chalmers, and John B. Pearson. **45**: 543—1969
Sonic system for locating objects in the bottom of a borehole. Richard L. Caldwell and Joseph Zemanek, Jr. **45**: 1592—1969
Underwater gas explosion seismic wave generator. Lauren G. Kilmer. **45**: 542—1969
Velocity well logging. Charles B. Vogel. **45**: 1592—1969
Wavelet reconstruction process for sonic, seismic and radar exploration. Daniel Silverman. **45**: 826—1969

12.11 **Effect of Sound on Structures. Fatigue. (See also 11.8.)**

Papers

Response of uniform beams to homogeneous, random pressure fields. Malcolm J. Crocker and Robert W. White. **45**: 1097—1969
Transient interaction of plane acoustic waves with a spherical elastic shell. H. Huang. **45**: 661—1969

Abstracts

Fatigue evaluation of noise-suppression materials. D. H. Scott. **45**: 329—1969
Response of linear, distributed systems to random fields: applications of the fast Fourier transform. Pritchard H. White and Robert K. Otnes. **45**: 338—1969
Response of model structures to sound fields. Robert W. Benson. **45**: 332—1969
Some interrelated acoustics and aerodynamics of transonic shock-boundary-layer unsteadiness. E. J. Luksus, J. T. Huang, and V. C. Stevens. **45**: 329—1969

Patents

Sonic cutting apparatus. Albert G. Bodine, Jr. **45**: 1326—1969
Sonic method and apparatus for implanting underground concrete walls. Albert G. Bodine. **45**: 1326—1969
Sonic process of placement of sand drains. Albert G. Bodine, Jr. **45**: 1592—1969

12.12 **Random Vibration**

Papers

Cross correlation in structural systems: dispersion and nondispersion waves. P. H. White. **45**: 1118—1969
Response of uniform beams to homogeneous, random pressure fields. Malcolm J. Crocker and Robert W. White. **45**: 1097—1969
Statistical analysis of power injection and response in structures and rooms. R. H. Lyon. **45**: 545—1969

Letters to the Editor

Acoustic radiation from a random line source. S. Gardner and O. Lindemann. **45**: 239—1969

Abstracts

Response of linear, distributed systems to random fields: applications of the fast Fourier transform. Pritchard H. White and Robert K. Otnes. **45**: 338—1969

13 **UNDERWATER SOUND**

13.1 **General, Unclassified**

Papers

Computers in acoustics: symbiosis of an old science and a new tool. M. R. Schroeder. **45**: 1077—1969

Technical Notes and Research Briefs

Mysterious sounds from the deep. **45**: 1576—1969

Patents

Acoustical underwater control apparatus. Paul C. Koomey and Alan J. Streb. **45**: 1326—1969

13.2 **Propagation of Sound in Water. Attenuation. Fluctuation**

Papers

Acoustic propagation in a channel with range-dependent sound speed. J. T. Warfield and M. J. Jacobson. **45**: 1145—1969
Asymptotic solution for the sound field in shallow water with a negative velocity gradient. R. N. Denham. **45**: 365—1969
Covariance between acoustic signals traveling diverging paths in a random medium. William J. Sederowitz and Andrew G. Favret. **45**: 386—1969
Hydroacoustic signals from the CHASE V explosion. A. C. Kibblewhite and R. N. Denham. **45**: 944—1969
Intensity equations in ray acoustics. I. Peter Uginčius. **45**: 193—1969
Intensity equations in ray acoustics. II. Peter Uginčius. **45**: 206—1969
Observations of fluctuation of transmitted sound in shallow water. R. J. Urick, G. R. Lund, and D. L. Bradley. **45**: 683—1969
On the effects of stochastic boundary perturbations on acoustic wave propagation—the theory. Dimitri S. Bugnolo. **45**: 1560—1969
Theory of the axial ray. Melvin A. Pedersen. **45**: 157—1969

Letters to the Editor

Spatial correlation of ocean movements and sound velocity fluctuations. J. C. Beckerle. **45**: 1050—1969
Surface-coupled losses in surface sound channel propagation. II. M. Schulkin. **45**: 1054—1969

Abstracts

Acoustic wave scattering and transmission by corrugated surfaces. Peter A. Barakos. **45**: 307—1969

Attenuation of acoustic waves by submerged viscoelastic spherical shells. George Workman and Sabih I. Hayek. **45:** 296—1969

Effects of an undulating bottom on the propagation of sound in shallow water. A. J. Kamenyitzky. **45:** 307—1969

Normal mode solution for a bilinear profile with fluid-type bottom. C. L. Bartberger and L. L. Ackler. **45:** 306—1969

Observations of the fluctuation of transmitted sound in shallow water. R. J. Urick. **45:** 307—1969

Range focusing in a deep-ocean sound channel with parabolic profile. H. Überall and N. C. Nicholas. **45:** 295—1969

Shallow-water acoustic studies. Bernard Sussman and William G. Kanabis. **45:** 302—1969

Some thoughts on the stochastic Born series for sound propagation in the ocean. Dimitri S. Bugnolo. **45:** 306—1969

Temperature dependence of low-frequency sound attenuation in fresh and sea water. Everett N. Jones, David G. Browning, William H. Thorp, and Robert H. Mellen. **45:** 306—1969

Vertical obstacle sonar prototype trials. John C. Nickles and Victor C. Anderson. **45:** 306—1969

Errata

Intensity equations in ray acoustics. I [J. Acoust. Soc. Amer. **45,** 193–205 (1969)]. Peter Uginčius. **45:** 1572—1969

Intensity equations in ray acoustics. II [J. Acoust. Soc. Amer. **45,** 206–209 (1969)]. Peter Uginčius. **45:** 1572—1969

13.3 Velocity of Sound in Water. Refraction. Doppler Effect

Papers

Acoustic propagation in a channel with range-dependent sound speed. J. T. Warfield and M. J. Jacobson. **45:** 1145—1969

Asymptotic solution for the sound field in shallow water with a negative velocity gradient. R. N. Denham. **45:** 365—1969

Hydroacoustic signals from the CHASE V explosion. A. C. Kibblewhite and R. N. Denham. **45:** 944—1969

Intensity equations in ray acoustics. I. Peter Uginčius. **45:** 193—1969

Intensity equations in ray acoustics. II. Peter Uginčius. **45:** 206—1969

Observations of fluctuation of transmitted sound in shallow water. R. J. Urick, G. R. Lund, and D. L. Bradley. **45:** 683—1969

Theory of the axial ray. Melvin A. Petersen. **45:** 157—1969

Letters to the Editor

Comments concerning the determination of absolute sound speeds in distilled and seawater and Pacific Sofar speeds. J. R. Lovett. **45:** 1051—1969

Remarks on "Absolute sound speed measurements in water" [A. Carnevale *et al.*, J. Acoust. Soc. Amer. **44,** 1098–1102 (1968)]. Vincent A. Del Grosso. **45:** 1287—1969

Spatial correlation of ocean movements and sound velocity fluctuations. J. C. Beckerle. **45:** 1050—1969

Abstracts

Effects of an undulating bottom on the propagation of sound in shallow water. A. J. Kamenyitzky. **45:** 307—1969

Normal mode solution for a bilinear profile with fluid-type bottom. C. L. Bartberger and L. L. Ackler. **45:** 306—1969

Phase variation of the acoustic field along a ray. A. J. Friedman. **45:** 306—1969

Pressure-insensitive deep-sea velocimeter. T. Lynch, H. Patten, and D. Webb. **45:** 332—1969

Range focusing in a deep-ocean sound channel with parabolic profile. H. Überall and N. C. Nicholas. **45:** 295—1969

Patents

Determination of ocean sound velocity profiles. Gerhard H. De Witz. **45:** 291—1969

Errata

Intensity equations in ray acoustics. I [J. Acoust. Soc. Amer. **45,** 193–205 (1969)]. Peter Uginčius. **45:** 1572—1969

Intensity equations in ray acoustics. II [J. Acoust. Soc. Amer. **45,** 206–209 (1969)]. Peter Uginčius. **45:** 1572—1969

13.4 Reflection. Echoes. Structure for Absorbing Sound in Water

Papers

Acoustic pulses scattered by a rigid sphere immersed in a fluid. Anthony J. Rudgers. **45:** 900—1969

Coherence of acoustic signals reradiated from the time-varying surface of the ocean. B. E. Parkins. **45:** 119—1969

Direct experimental verification of creeping waves. M. L. Harbold and B. N. Steinberg. **45:** 592—1969

Hydroacoustic signals from the CHASE V explosion. A. C. Kibblewhite and R. N. Denham. **45:** 944—1969

Observations of fluctuation of transmitted sound in shallow water. R. J. Urick, G. R. Lund, and D. L. Bradley. **45:** 683—1969

Transient interaction of plane acoustic waves with a spherical elastic shell. H. Huang. **45:** 661—1969

Letters to the Editor

Bistatic measurements of acoustic waves scattered from a statistically rough, known surface. W. D. Boles, A. K. Fung, and R. K. Moore. **45:** 1040—1969

Comments on "Phase changes and pulse deformation in acoustics" [I. Tolstoy, J. Acoust. Soc. Amer. **44,** 675–683 (1968)]. Miguel C. Junger. **45:** 518—1969

Abstracts

Attenuation of acoustic waves by submerged viscoelastic spherical shells. George Workman and Sabih I. Hayek. **45:** 296—1969

Reflection of ultrasonic waves: phase shift, lateral beam displacement, and surface waves. A. L. Van Buren. **45:** 341—1969

Shadowing of randomly rough surfaces. K. E. Hawker, Jr., and P. J. Welton. **45:** 295—1969

Transmission and reflection of sound by plates submerged in water. Walter M. Barss. **45:** 341—1969

13.5 Interference. Diffraction

Papers

Transient interaction of plane acoustic waves with a spherical elastic shell. H. Huang. **45:** 661—1969

Letters to the Editor

Comments on "Phase changes and pulse deformation in acoustics" [I. Tolstoy, J. Acoust. Soc. Amer. **44,** 675–683 (1968)]. Miguel C. Junger. **45:** 518—1969

Spectrum broadening due to ocean-wave interference. J. V. McNicholas. **45:** 1053—1969

13.6 Scattering. Reverberation in Water

Papers

Acoustic pulses scattered by a rigid sphere immersed in a fluid. Anthony J. Rudgers. **45:** 900—1969

Coherence of acoustic signals reradiated from the time-varying surface of the ocean. B. E. Parkins. **45:** 119—1969

Direct experimental verification of creeping waves. M. L. Harbold and B. N. Steinberg. **45:** 592—1969

Letters to the Editor

Bistatic measurements of acoustic waves scattered from a statistically rough, known surface. W. D. Boles, A. K. Fung, and R. K. Moore. **45:** 1040—1969

Spectrum broadening due to ocean-wave interference. J. V. McNicholas. **45:** 1053—1969

Abstracts

Acoustic wave scattering and transmission by corrugated surfaces. Peter A. Barakos. **45:** 307—1969

Degradation of detectability of passive signals due to surface scattering. John F. McDonald. **45:** 294—1969

Experimental investigation at 60 kHz of the azimuthal dependence of sea surface backscattered sound. J. C. Reeves. **45:** 307—1969

Shadowing of randomly rough surfaces. K. E. Hawker, Jr., and P. J. Welton. **45:** 295—1969

Some thoughts on the stochastic Born series for sound propagation in the ocean. Dimitri S. Bugnolo. **45:** 306—1969

Transmission and reflection of sound by plates submerged in water. Walter M. Barss. **45:** 341—1969

13.7 Radiation from Objects Vibrating under Water. Acoustical and Mechanical Impedance. (See also 5.3, 11.5, and 12.3z.)

Papers

Arbitrarily reinforced dome plate and flow noise. I. Signal reception. Edward Y. T. Kuo. **45:** 372—1969

Calculation of the field of a baffled array by the geometrical theory of diffraction. D. L. Hutchins and R. G. Kouyoumjian. **45:** 485—1969

High-frequency response of point-excited submerged, spherical shells. M. C. Junger and D. Feit. **45:** 630—1969

Pulsed circumferential waves on aluminum cylinders in water. Werner G. Neubauer. **45:** 1134—1969

Radiation pressure on a vibrating hemispherical meniscus. Wesley L. Nyborg and James A. Rooney. **45:** 384—1969

Letters to the Editor

Comments on "Numerical evaluation of the radiation impedance for a piston in a nonrigid baffle" [D. Feit and M. E. Duncan, J. Acoust. Soc. Amer. **43,** 885–886 (L) (1968)]. Visvaldis Mangulis. **45:** 1045—1969

Operational method for evaluating the farfield radiation from plane boundaries. G. Maidanik. **45:** 1044—1969

Abstracts

Attenuation of acoustic waves by submerged viscoelastic spherical shells. George Workman and Sabih I. Hayek. **45:** 296—1969

Design parameters of free-flooding cylindrical transducers. M. C. Junger. **45:** 295—1969

Digital camera for acoustic applications. L. A. Lopes and O. F. Thomas. **45:** 339—1969

Farfield prediction from nearfield crosspower measurements. John L. Butler. **45:** 338—1969

Measured radiation characteristics of hexagonal transducer arrays. George J. Gruber. **45:** 332—1969

On the performance of small sound sources in planar arrays. Part I. Marilyn W. Andrulis and George J. Gruber. **45:** 332—1969

Radiation impedance and directivity of a free-flooding ring (squirter) transducer. T. Yen, M. E. Duncan, and L. C. Copley. **45:** 295—1969

Transmission and reflection of sound by plates submerged in water. Walter M. Barss. **45:** 341—1969

13.8 Sound Generation by Liquid Motion, Bubbles, Turbulence, Splashes. (See also 13.12.)

Papers

Arbitrarily reinforced dome plate and flow noise. I. Signal reception. Edward Y. T. Kuo. **45:** 372—1969

Effect of rain on underwater noise level. Nicolaas Bom. **45:** 150—1969

Turbulent-flow-excited vibration of a simply supported, rectangular flat plate. Wayne A. Strawderman and Ronald S. Brand. **45:** 177—1969

Abstracts

Generation of subharmonics of order one-half: a continuation. L. P. Solomon and L. L. Evans. **45:** 339—1969

13.9 Noise in Water, Ship Noise. Flow Noise, Biological Noises.

Papers

Analysis of an integral equation arising from the investigation of vertical directivity of sea noise. M. W. Anderson and R. L. Tittle. **45:** 1129—1969

Effect of rain on underwater noise level. Nicolaas Bom. **45:** 150—1969

Abstracts

Detection of signals in noise of uncertain level. Ronald L. Spooner. **45:** 301—1969

Effect of rain on underwater noise level. Nicolaas Bom. **45:** 296—1969

Likelihood-ratio detector for a known signal in nonstationary ocean noise. C. P. Hatsell and L. W. Nolte. **45:** 301—1969

Sound radiated by spheres falling in dilute aqueous solutions of polyethylene oxide. J. V. Sanders and J. M. Sendek. **45:** 339—1969

Patents

Fish attracting apparatus. Joseph D. Richard and Warren J. Wisby. **45:** 1327—1969

Sonic fishing lure. Verl J. Bornzin. **45:** 1593—1969

13.10 Underwater Macrosonics. Explosions. Distortion. (See also 14.2 and 12.5.)

Papers

Hydroacoustic signals from the CHASE V explosion. A. C. Kibblewhite and R. N. Denham. **45:** 944—1969

13.11 Instruments Relating to Underwater Sound

Papers

Nearly spherical acoustic lenses. Henry R. Feldman. **45:** 868—1969

Testing and performance of a wide-band underwater liquid communicator. W. S. Mitchell and D. Muster. **45:** 733—1969

Technical Notes and Research Briefs

Acoustic transmission of underwater TV. **45:** 1060—1969

Award winning acoustic devices. **45:** 1061—1969

Abstracts

Digital camera for acoustic applications. L. A. Lopes and O. F. Thomas. **45:** 339—1969

Generating and calibrating a uniform aquatic sonic field for behavioral bioacoustics. Burton A. Weiss. **45:** 343—1969

Measured radiation characteristics of hexagonal transducer arrays. George J. Gruber. **45:** 332—1969

On the performance of small sound sources in planar arrays. Part I. Marilyn W. Andrulis and George J. Gruber. **45:** 332—1969

Pressure-insensitive deep-sea velocimeter. T. Lynch, H. Patten, and D. Webb. **45:** 332—1969

Patents

Control apparatus. James A. Lagoe. **45:** 1593—1969

Control apparatus. James A. Lagoe and Dan H. Kusaka. **45:** 1593—1969

Fish counting device. Albert A. Menin and Reginald J. Cyr. **45:** 1327—1969

13.11n Navigational Instruments Using Underwater Sound. Underwater-Listening and Echo-Ranging Devices. Sonar

Technical Notes and Research Briefs

Acoustic transmission of underwater TV. **45:** 1060—1969

Award winning acoustic devices. **45:** 1061—1969

Doppler sonar navigation system. **45:** 1059—1969

Undersea acoustic geodetic marker. **45:** 1575—1969

Abstracts

Ocean surface bias on Doppler system output. H. S. Hayre and T. G. Avgeris. **45:** 295—1969

Optimum passive bearing estimation. V. H. McDonald and P. M. Schultheiss. **45:** 294—1969

Vertical obstacle sonar prototype trials. John C. Nickles and Victor C. Anderson. **45:** 306—1969

Patents

Data signal processor. Henry L. Warner and David H. Brown. **45:** 291—1969

Echo-ranging apparatus. William Halliday and Roy William George Haslett. **45:** 292—1969

Echo sounding apparatus. Heinz A. E. Thiede, Gunther F. W. Berkelmann, and Reinhard W. Leisterer. **45:** 1327—1969

Magnetic transmission listen switch for sonar. Benjamin Barron. **45:** 1327—1969

Sea-life locator. Michael J. Prebish. **45:** 292—1969

Sea navigational system for locating a floating installation or a submarine. Pierre Moulin, Jean Pierre Barret, and Michel La Porte. **45:** 1328—1969

Sonar multibeam tracking system including a digital 90° phase shifter. James A. Ladstatter. **45:** 1327—1969

Sonic echo system. William B. McLean. **45:** 291—1969

Submarine tracking apparatus. Franklin A. Dobson. **45:** 1327—1969

System for locating underwater objects. Richard A. Salathiel. **45:** 1327—1969

Target information determining system. Ernest A. Keller. **45:** 1328—1969

Ultrasonic system for inspecting submerged piles. Joseph Zemanek, Jr. and Richard L. Caldwell. **45:** 1588, 1593—1969

13.11t Transducers for Underwater Sound. Transducer Calibration. (See also 5.18.)

Papers

Arbitrarily reinforced dome plate and flow noise. I. Signal reception. Edward Y. T. Kuo. **45:** 372—1969

Flextensional underwater acoustics transducer. L. H. Royster. **45:** 671—1969

Nonlinear design technique for high-power magnetostrictors. Roy R. Whymark. **45:** 827—1969

Radiation characteristics of spherically symmetric, perfect focusing acoustic lenses. C. A. Boyles. **45:** 351—1969

Wave theory of an acoustic Luneburg lens. II. The theory of variable density lenses. C. A. Boyles. **45:** 356—1969

Abstracts

Air and water sirens—their analysis, design, and performance. W. S. Mitchell and D. Muster. **45:** 345—1969

Design parameters of free-flooding cylindrical transducers. M. C. Junger. **45:** 295—1969

Farfield prediction from nearfield crosspower measurements. John L. Butler. **45:** 338—1969

Measured radiation characteristics of hexagonal transducer arrays. George J. Gruber. **45:** 332—1969

Measurement of the high-pressure propagation constants in various materials. R. W. Higgs and L. J. Eriksson. **45:** 346—1969

New high-power underwater sound source for the low-audio range. J. E. Donovan and R. J. Kieser. **45:** 345—1969

On the performance of small sound sources in planar arrays. Part I. Marilyn W. Andrulis and George J. Gruber. **45:** 332—1969

Radiation impedance and directivity of a free-flooding ring (squirter) transducer. T. Yen, M. E. Duncan, and L. C. Copley. **45:** 295—1969

Patents

Acoustic generator of the spark discharge type. Hubert A. Wright, Jr. and John P. Tobey, Jr. **45:** 292—1969

Acoustic transducers. Jack Alan Siebert. **45:** 1328—1969

Acoustic wave producing device. M. I. Balashkand, G. S. Evdokimov, B. L. Kaplan, S. A. Lovlya, L. N. Solodilov, and O. L. Chen. **45:** 1328—1969

Calibration method using transducer array with constant pressure plane wave near-field. Winfield J. Trott. **45:** 826—1969

Coaxially mounted line hydrophone. Frank Massa. **45:** 1594—1969

Electromechanical transducer. Alan H. Lubell. **45:** 826—1969

Elliptic free-flooding magnetostrictive scroll. Theodore J. Meyers. **45:** 544—1969

Hemispherical gas filled shell for acoustical time delay action. Wesley L. Angeloff and Frank R. Abbott. **45:** 544—1969

Marine vibration transducer. Jimmy R. Cole and Frank Clynch. **45:** 544—1969

Sonic beam former. Frank R. Abbott. **45:** 543—1969

Transmit-receive sonar array network. Harvey J. Klee. **45:** 1594—1969

Underwater hydrodynamic projector. Robert H. Mellen, Robert Berman, and Kenneth L. Moothart. **45:** 1328—1969

13.12 Acoustic Cavitation

Letters to the Editor

Detection of cavities produced in a liquid by ionizing particles. P. Marietti, D. Sette, and F. Wanderlingh. **45:** 515—1969

Abstracts

Cavitation measurements on silicone oils by utilization of a pumping effect. Ernest G. Lierke and Heinz Wollny. **45:** 340—1969

Discontinuities in cavitation characteristics of supersaturated air-water solutions. Ernest G. Lierke. **45:** 304—1969

Ultrasonic detection of cavitation at catheter tips. F. W. Kremkau, R. Gramiak, E. L. Carstensen, P. M. Shah, and D. H. Kramer **45:** 340—1969

14 AEROACOUSTICS, MACROSONICS

14.1 General, Unclassified

Abstracts

Development of a new, large-vehicle acoustical test facility. William H. Craft. **45:** 347—1969

14.2 Macrosonic Propagation. Distortion of the Wavefront. Shock Waves. Blast Waves. Supersonic Boom

Papers

Definition of a linear medium for one-dimensional longitudinal motion. R. N. Thurston. **45:** 1329—1969

Generation and propagation of finite-amplitude, rounded, inverted sawtooth waves in the air. **45:** 210—1969

Propagating and standing sawtooth waves. Samuel Temkin. **45:** 224—1969

Stability of a plane shock wave in free space and in the presence of rigid or interfacial boundaries. A. A. Kovitz and M. G. Briscoe. **45:** 1157—1969

Letters to the Editor

Lengthening of shock waveforms caused by their propagation to high altitudes. Fred B. Daniels. **45:** 241—1969

Reply to "Reply to 'Comments on "Farfield spectrum of the sonic boom" ' " [Walton L. Howes, J. Acoust. Soc. Amer. **43,** 374–375(L) (1968)]. E. E. Zepler. **45:** 239—1969

Suggested simplified presentation of one aspect of finite-amplitude field theory. V. G. Welsby. **45:** 1571—1969

Abstracts

Atmosphere effects on sonic-boom overpressures. Allan D. Pierce and Charles L. Thomas. **45:** 344—1969

Determination of the large-amplitude properties of magnetostrictive materials. R. R. Whymark. **45:** 346—1969

Limits of validity of a perturbation solution for a finite-amplitude standing wave confined to a duct. Alan B. Coppens and J. V. Sanders. **45:** 340—1969

Temperature dependence of ultrasonic harmonic generation in copper single crystals. R. D. Peters and M. A. Breazeale. **45:** 334—1969

Theoretical predictions of farfield acoustic waveforms generated by large atmospheric explosions. Allan D. Pierce and Joe W. Posey. **45:** 344—1969

Thermoviscous attenuation of sound traveling parallel to a rigid, impermeable wall. David T. Blackstock. **45:** 340—1969

Patents

Shock wave treatment method and apparatus. Norman G. Branson. **45:** 1594—1969

14.3 Gross Movement of Matter by Sound Waves. Acoustic Streaming

Patents

Apparatus for crushing rock material and the like utilizing complex sonic wave action. Albert G. Bodine. **45:** 1594—1969

Piezoelectric pump. James E. Webb. **45:** 292—1969

14.4 Radiation Pressure. (See also 5.14.)

Papers

Radiation pressure on a vibrating hemispherical meniscus. Wesley L. Nyborg and James A. Rooney. **45:** 384—1969

14.6 Interaction of Fluid Motion and Sound

Patents

Vibrating transducer for flow and related measurements. Robert B. Jacobs. **45:** 1594—1969

14.7 Generation of Sound by Fluid Flow

Papers

Experimental study of aerodynamic sound from a rotating disk. Robert C. Chanaus. **45:** 392—1969

Spoiler-generated flow noise. II. Results. Colin G. Gordon. **45:** 214—1969
Theoretical analysis of the performance of an air-modulated speaker. Warren A. Meyer. **45:** 957—1969
Turbulent-flow-excited vibration of a simply supported, rectangular flat plate. Wayne A. Strawderman and Ronald S. Brand. **45:** 177—1969

Letters to the Editor

Supersonic flow through statistically roughened wall ducts. C. R. Ortloff and J. P. Jones. **45:** 1288—1969

Abstracts

Flow-induced vibration of a single circular cylinder by the wake at the transition Reynolds number range. Y. N. Chen. **45:** 339—1969
Nonisentropic acoustic wave generation. Abraham C. Peter. **45:** 339—1969
Preliminary study of oscillatory radial flow between disks and its acoustic field. R. C. Chanaud. **45:** 345—1969
Sound radiated by spheres falling in dilute aqueous solutions of polyethylene oxide. J. V. Sanders and J. M. Sendek. **45:** 339—1969
Theoretical prediction of aerodynamically generated noise in fans and compressors. M. J. Benzakein and S. B. Kazin. **45:** 345—1969

15 ACOUSTIC SIGNAL PROCESSING

15.1 General, Unclassified

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Computers in acoustics: symbiosis of an old science and a new tool. M. R. Schroeder. **45:** 1077—1969

15.2 Statistical Theory of Signals

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Optimum arrays and the Schwartz inequality. Henry Cox. **45:** 228—1969
Rejection of a coherent arrival at an array. Victor C. Anderson and Philip Rudnick. **45:** 406—1969

Letters to the Editor

Acoustic radiation from a random line source. S. Gardner and O. Lindemann. **45:** 239—1969
Comment on "On the detection of a known signal in a non-Gaussian noise process" [R. L. Sponner, J. Acoust. Soc. Amer. **44,** 1414–147 (1968)]. Carl W. Helstrom. **45:** 1055—1969
Reply to "Comments on 'On the detection of a known signal in a non-Gaussian noise process'" [C. W. Helstrom, J. Acoust. Soc. Amer. **45,** 1053–1954(L) (1969)]. Ronald L. Sponner. **45:** 1056—1969

Abstracts

Ambiguity function for wide- and narrow-band signals with the effect of the accelerating point target. S. P. Lee. **45:** 301—1969
Automatic detection of English stress. Elizabeth Jancosek and Yukio Takefuta. **45:** 316—1969
Bearing estimation using data from many beams. S. D. Shapiro and R. J. Griffith. **45:** 300—1969
Detection of signals in noise of uncertain level. Ronald L. Sponner. **45:** 301—1969
Instrumentation for space-averaging sound pressure levels. John Wootten. **45:** 337—1969
Likelihood-ratio detector for a known signal in nonstationary ocean noise. C. P. Hatsell and L. W. Nolte. **45:** 301—1969
Ocean surface bias on Doppler system output. H. S. Hayre and T. G. Avgeris. **45:** 295—1969
Optimum detection of signals with random wavefronts. C. D. Seligson. **45:** 302—1969
Sequential classification model. Richard A. Roberts. **45:** 301—1969
Signal processing for a cocktail party effect. O. M. M. Mitchell, C. A. Ross, and G. H. Yates. **45:** 315—1969
Signal-to-noise ratio in amplitude quantizers. P. R. Hariharan. **45:** 301—1969
Some aspects of the theory of diffusion and diffusers. P. E. Doak and S. D. Dodd. **45:** 338—1969
Spatial averaging in sound-power measurements. David Lubman. **45:** 337—1969
Theory of acoustic spatial coherence for long-range transmission. H. W. Broek. **45:** 301—1969

15.3 Space–Time Processing Methods. Automatic Recognition

Papers

Comparison of receiver performance: the ESP receiver. R. L. Spooner. **45:** 233—1969
DICANNE, a realizable adaptive process. Victor C. Anderson. **45:** 398—1969
Optimum arrays and the Schwartz inequality. Henry Cox. **45:** 228—1969
Rejection of a coherent arrival at an array. Victor C. Anderson and Philip Rudnick. **45:** 406—1969
Theory of holographic interferometry. G. M. Brown, R. M. Grant, and G. W. Stroke. **45:** 1166—1969

Letters to the Editor

Technique for enhancing signals for auditory detection. R. C. Lummis and M. R. Schroeder. **45:** 1290—1969

Abstracts

Bearing estimation using data from many beams. S. D. Shapiro and R. J. Griffith. **45:** 300—1969
Degradation of detectability of passive signals due to surface scattering. John F. McDonald. **45:** 294—1969
Optimum detection of signals with random wavefronts. C. D. Seligson. **45:** 302—1969
Optimum passive bearing estimation. V. H. McDonald and P. M. Schultheiss. **45:** 294—1969
Signal-gain comparison of three schemes for filtering signals that have propagated through a random multipath medium. D. T. Mangano. **45:** 302—1969
Theory of acoustic spatial coherence for long-range transmission. H. W. Broek. **45:** 301—1969

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Pulse signal demodulator with judgement level producing and comparison means. Edward A. H. Bowsher and Kenneth G. Perkins. **45:** 1595—1969

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Theory of holographic interferometry. G. M. Brown, R. M. Grant, and G. W. Stroke. **45:** 1166—1969

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Behnke, Wallace R. and Curt R. R. Wolfanger. 3,410,947. Sound reproducing system. **46:** 1428—1969

Beisecker, Gerhard J. and Robert M. Fischer. 3,370,499. Pipe for musical instruments. **46:** 1421—1969

Bellace, James R. (see Buck, Francis E.). **46:** 1431—1969

Bender, Werner K. (see Schwartz, Morris). **46:** 331—1969

Benson, Harvey S. (see Rollwitz, William L.). **46:** 1431—1969

Bertheas, Jean. 3,435,407. High speed system for processing long range sonar pulses. **46:** 568—1969

Blenkarn, Kenneth A and Arthur Lubinski. 3,406,524. Fluid-sonic pile driving. **46:** 566—1969

Bloch, Peter K. (see Soloff, Robert S.). **46:** 334—1969

Bodine, Albert G. 3,446,666. Sonic process and apparatus for cleaning pipes. **46:** 882—1969

—— 3,456,885. Sonic method and apparatus for demolition of structures. **46:** 1431—1969

Bodine, Albert G., Jr. 3,439,409. Apparatus for accomplishing sonic fusion welding and the like involving variable impedance load factors. **46:** 1118—1969

—— 3,446,084. Sonic vibration generator. **46:** 882—1969

—— 3,447,480. Method and apparatus for gravity flow casting utilizing sonic energization. **46:** 880—1969

—— 3,447,587. Method and device for mold casting utilizing sonic energization. **46:** 882—1969

Boggs, Raymond R., Jr., Henry C. Locklar, and L. Elwood West. 3,418,432. Remote control matrix dictating system. **46:** 69—1969

Bohm, H. V. (see Houck, J. R.). **46:** 1420—1969

Boll, Harry J. 3,440,363. Shock-resistant microphone. **46:** 332—1969

Borges, Eberhard. 3,433,321. Method of and apparatus for detecting faults in subsurface strata. **46:** 337—1969

Bosselaar, Hendrik. 3,442,349. Acoustic pipeline leak detector. **46:** 881—1969

Bostroem, Hans and Friedrich Howey. 3,439,318. Echo sounding method and apparatus. **46:** 884—1969

Botsco, R. J. 3,453,872. Eddy sonic inspection method. **46:** 1430—1969

Bouyoucos, John V. 3,415,330. Hydroacoustic apparatus. **46:** 336—1969

Boxer, Theodore, Harold Jackson, William Nelson, William Robison, and Sorrell Weisman. 3,244,011. Solid state accelerometer. **46:** 566—1969

Boyd, Charles A. 3,433,226. Vibratory catheterization apparatus and method of using. **46:** 568—1969

Bozak, Rudolph T. 3,436,494. Compliant annulus for loudspeaker and related circuit. **46:** 330—1969

Bradt, Gordon E. 3,433,112. Chord-forming device for stringed instrument. **46:** 563—1969

Brand, John R. and Stanley Cutler, 3,359,358. Chord organ switching circuit for selectively playing either chords or single notes by depressing one key. **46:** 1424—1969

Branson, Norman G. 3,443,797. Instrument for measuring cavitation intensity in a liquid. **46:** 882—1969

Brenner, Charles E. 3,430,261. Sound attenuator attachment for a protective helmet. **46:** 1420—1969

Brey, James Robert. 3,417,370. Seismic velocity correlation. **46:** 337—1969

Bright, Thomas F. 3,402,251. Electrical accordion-organ. **46:** 563—1969

Bringman, Joseph M., James M. Lawther, and Paul M. Kendig. 3,435,409. Line array hydrophone and system. **46:** 568—1969

Brock, Fred A. and Roy C. Johnston. 3,437,170. Control of energy spectrum in marine seismic exploration. **46:** 567—1969

Brooks, Fred A. 3,418,580. Voice signal processing and phase equalizing for SSB system. **46:** 564—1969

Brooks, Jerry R. 3,339,444. Trumpet embouchure. **46:** 1421—1969
Brooks, John D. 3,395,720. Magnetohydrodynamic-vortex stream transducer. **46:** 331—1969
Brown, Graydon L. and Bobby J. Thomas. 3,460,648. Digital system for controlling a seismic vibrator. **46:** 1430—1969
Bryant, Herbert W. Norman C. Hazell, and Lionel W. Mosing. 3,440,365. Telephone headset with adjustable speech tube. **46:** 331—1969
Bryant, James Timothy (see Greenleaf, Leland B.). **46:** 878—1969
Buck, Francis E. and James R. Bellace. 3,447,627. Underwriter sound reflector apparatus. **46:** 1431—1969
Buescher, James E. (see Stapleton, Fred E.). **46:** 567—1969
Bull, Rame W., William C. Ring, and Ray B. Schrecongost. 3,376,776. Organ portamento system. **46:** 1425—1969
Burg, Kenneth E. 3,398,715. Seismic underwater detector system. **46:** 1430—1969
—— 3,437,987. Underwater navigation method and system. **46:** 884—1969
Burton, Howard A. 3,379,085. Operational circuitry for pipe organs. **46:** 1421—1969

C

Caldwell, Richard L. 3,434,568. Three-dimensional display of borehole logs. **46:** 337—1969
Calkins, Gilbert R. 3,394,698. Ear noise suppressor and speech clarifier. **46:** 1111—1969
Calloway, Vernon E. and Leonard S. Goralski. 3,439,774. Sound energy absorbing apparatus. **46:** 1110—1969
Carlisle, Richard W. (see Sebesta, George J.). **46:** 70—1969
Carnevale, Edmund H., Lawrence C. Lynnworth and Ronald N. Lawson. 3,425,064. Transducer for artificial heart. **46:** 75—1969
Cary, Boyd B. (see Rubega, Robert A.). **46:** 1120—1969
Cassel, Lawrence E. 3,376,387. Fundamental frequency extractor for voice signals. **46:** 333—1969
Cassel, Thomas R. 3,348,629. Resonator silencer. **46:** 73—1969
Cassidy, John D. (see Bauer, Donald R.). **46:** 1110—1969
Catroppa, Frank A. and Sidney Hirsch. 3,423,759. Protective and sound attenuation helmet. **46:** 1112—1969
Cavalier, Gilbert. 3,433,059. Coupling member for ultrasonic scanning device. **46:** 334—1969
Cawley, John H. and Daniel Schiff. 3,441,901. System for measuring sound velocity in water as a function of depth. **46:** 1118—1969
Cholet, Jacques, Jean Pierre Fail, Gerard Grau, and Pierre Magneville. 3,444,953. Device to avoid the pulsation of the gas bubbles generated by underwater explosions. **46:** 1118—1969
Christie, Cornelius W. 3,416,804. Stereophonic speaker arrangement for a phonograph. **46:** 69—1969
Clapper, Genung L. 3,418,429. Speech analysis system. **46:** 563—1969
Clark, Kenneth C. 3,417,647. Mechanical tuning peg for stringed instruments. **46:** 71—1969
Cohen, Abraham B. 3,432,002. Horn-loaded loudspeaker. **46:** 330—1969
Cohen, David D. and Armand F. Du Fresne. 3,416,516. Blood pressure cuff transducer. **46:** 885—1969
Cole, John M. 3,436,006. Ultrasonic welding device. **46:** 333—1969
Cook, E. G. 3,433,462. Method and apparatus for resonating small piezoelectric crystals at low frequencies. **46:** 74—1969
Cookerly, Jack C. and George R. Hall. Re. 26,533. Tone generation system. **46:** 1113—1969
—— **and George Robert Hall.** 3,256,381. Tone level control circuit. **46:** 1423—1969
—— **and George R. Hall.** 3,417,646. Neck construction for a stringed musical instrument. **46:** 71—1969
Cooper, Robert F. and Douglas E. Powell. 3,380,026. Program control system for organs or the like. **46:** 1421—1969
Cowan, Gerald de G. 3,442,119. Ultrasonic search wheel assembly. **46:** 881—1969
Cox, Andrew P., Jr., and William L. Price. 3,432,851. Signal processor. **46:** 883—1969
Crosby, A. O. 3,431,370. Hearing aid coupling. **46:** 69—1969
Crosby, Arthur O. 3,431,370. Hearing aid coupling. **46:** 1419—1969
Crump, Gwyn N. (see Specht, Theodore R.). **46:** 1115—1969
Cullin, Hugh J. (see Dranetz, Abraham I.). **46:** 331—1969
Cunningham, Thomas W. 3,300,569. Electronic organ. **46:** 1423—1969
Cutler, Stanley (see Brand, John R.). **46:** 1424—1969

D

D'Amato, Carl. 3,435,153. Electronic sound producing walking cane. **46:** 331—1969
Daneman, Ben. 3,431,583. Sound attenuation for vacuum-type debris collector. **46:** 1115—1969
Daniels, H. P. C. and F. M. A. Rademakers. 3,455,015. Ultrasonic welding method and apparatus. **46:** 1429—1969
Dankert, H. S. and J. H. Geverink. 3,447,995. Anvil construction for ultrasonic sealing device. **46:** 881—1969
Dart, Rodger W. and Richard E. Smythe. 3,439,773. Method of and apparatus for imparting a seismic pulse to the earth. **46:** 567—1969
Davis, Billy W. and Roy C. Johnston. 3,437,171. Marine hydrophone vibration isolation. **46:** 1120—1969
De Priest, Joseph Roy. 3,426,181. Vocal counter circuit. **46:** 562—1969
Deremer, Floyd E. 3,298,458. Exhaust pipe silencers with telescoped gas passage tubes. **46:** 1428—1969
de Tullio, L., I. L. Spence, and R. Mosty. 3,431,549. Ultrasonic presence detectors. **46:** 1429—1969
Dickinson, Ben Wade Oakes III. 3,186,216. Method and apparatus for generating and receiving ultrasonic helical waves. **46:** 564—1969
Dopyera, John. 3,418,876. Stringed instrument neck construction **46:** 71—1969
Dory, J. 3,454,922. Ultrasonic pulse distance measuring device. **46:** 1420—1969
Dory, Jacques, 3,431,774. Ultrasonic testing apparatus for material in sheet or foil. **46:** 74—1969
Downing, Joe B. 3,403,588. Musical instrument with string tension adjustment. **46:** 563—1969
Dranetz, Abraham I. and Hugh J. Cullin. 3,148,290. Electromechanical transducer. **46:** 331—1969
Drenkelfort, Hans and Siegfried Thieme. 3,440,598. Contraxt control circuit for the indication provided by underwater sound apparatus. **46:** 1119—1969
Driver, Edgar S. and Maurice E. Taylor. 3,414,875. Processing of seismic data. **46:** 336—1969
Du Fresne, Armand F. (see Cohen, David D.). **46:** 885—1969
Dunning, William S. 3,430,728. Loudspeaker assembly with loudspeaker supported by vibratory diaphragm. **46:** 69—1969
Dyle, Charles A. 3,378,652. Keyboard switch assembly with improved contact means. **46:** 1426—1969

E

Efinger, Gerald H. (see Tyndale, Clyde L.). **46:** 1119—1969
Elion, Herbert A. (see Stetson, Karl A.). **46:** 335—1969
Elzas, Abraham Isidore and Abraham Samuel Elzas. 3,425,309. Heads of drums, banjos, tympani and the like musical instruments. **46:** 71—1969
Elzas, Abraham Samuel (see Elzas, Abraham Isidore). **46:** 71—1969

Erickson, Robert J. (see Ricketts, Luther W., Jr.). **46:** 1431—1969
Espinoza, Florence S. 3,404,498. Acoustical baffling cove system. **46:** 1110—1969
Everett, Wilhelm S. 3,454,129. Sound muting and filtering device. **46:** 1116—1969

F

Fail, Jean Pierre (see Cholet, Jacques). **46:** 1118—1969
Farr, Harold K. 3,436,721. Fan beam acoustic Doppler navigation system. **46:** 884—1969
Farr, John B., Harold M. Lang, and Moses G. Widess. 3,418,626. Optical deconvolution of seismic records. **46:** 74—1969
Fender, Clarence L. 3,427,916. Guitar and adjustable mute therefor. **46:** 878—1969
Field, Harry W. 3,425,156. Engine sound simulator. **46:** 74—1969
Fierle, E. J. and W. R. Melville. 3,445,092. Ultrasonic cleaning device. **46:** 880—1969
Fine, Jonathan E. 3,413,996. Acoustically or electrically controlled fluid amplifiers. **46:** 561—1969
Fischer, Robert M. (see Beisecker, Gerhard J.). **46:** 1421—1969
Flaherty, John J. and Peter J. Rosauer. 3,403,671. Ultrasonic transducer system. **46:** 885—1969
—— **and Peter J. Rosauer.** 3,439,530. Multi-scan ultrasonic testing apparatus. **46:** 565—1969
Flanagan, Gillis P. 3,393,279. Nervous system excitation device. **46:** 329—1969
Flanagan, James L. 3,417,837. Signal processor for multipath signals. **46:** 75—1969
Flatow, Tobias (see Mounce, Whitman D.). **46:** 566—1969
Freeman, Alfred B. 3,347,973. Chorus effects systems. **46:** 1424—1969
Fried, Robert. 3,403,589. Automatically programmed piano. **46:** 562—1969

G

Gardel, Robert and Egon Gorsky. 3,413,756. Sound-producing device for a toy figure. **46:** 332—1969
Geib, Robert L. and Richard T. Martin. 3,414,685. In-the-ear hearing aid. **46:** 68—1969
Geil, Frederick G. (see Nelkin. Arthur). **46:** 1420—1969
Geverink, H. J. (see Dankert, H. S.). **46:** 881—1969
Giegerich, A. and R. Sievers. 3,091,060. Ultrasonic machining. **46:** 1116—1969
Gillen, A. M. 3,204,458. Ultrasonic flowmeter. **46:** 1118—1969
Giller, Ronald R. 3,448,224. Rigid in-the-ear hearing aid. **46:** 1112—1969
Glazier, Walter H. 3,431,999. Common depth point seismic prospecting. **46:** 75—1969
Goble, Ralph W. 3,434,329. Electrostrictive effect in a transducer for drawing wire, rod or tube. **46:** 333—1969
—— 3,438,493. Inspection apparatus and method. **46:** 565—1969
Godwin, N. F. (see Hanstock, R. F.). **46:** 1117—1969
Goralski, Leonard S. (see Calloway, Vernon E.). **46:** 1110—1969
Gorsky, Egon (see Gardel, Robert). **46:** 332—1969
Grau, Gerard (see Cholet, Jacques). **46:** 1118—1969
Greenan, R. E. (see Uthe, P. M.). **46:** 881—1969
Greenheck, Robert C. 3,435,911. Acoustic curb. **46:** 73—1969
Greenleaf, Leland B. and James Timothy Bryant. 3,421,399. Key pads for musical instruments. **46:** 878—1969
Gregg, David Paul. 3,430,966. Transparent recording disc. **46:** 1112—1969
Griffin, Rose E. (see Moss, William A.). **46:** 73—1969
Gummel, Hermann K. and Vincent L. Rideout. 3,414,689. Shock mounting for electromechanical transducer. **46:** 562—1969
Gundlach, Christopher M. 3,385,394. Acoustical apparatus. **46:** 1427—1969
Gyorgy, Ernst M., Roy Conway LeCraw, and LeGrand G. VanUitert. 3,428,144. Elastic wave elements. **46:** 1112—1969

H

Habig, John B. and Maurice E. Schuler. 3,353,434. Piano conditioner. **46:** 1422—1969
Haggerty, John W. 3,457,375. Hearing aid mechanisms that are largely impervious to the leakage of sound energy at auto frequencies. **46:** 1419—1969
Hahn, William P. (see Hannes, George J.). **46:** 876—1969
Hall, George R. (see Cookerly, Jack C.). **46:** 71—1969
—— (see Cookerly, Jack C.). **46:** 1113—1969
—— (see Cookerly, Jack C.). **46:** 1423—1969
Hamberg, Edwin S. (see Yamamoto, Yujiro.). **46:** 337—1969
Hammett, Lloyd M. 3,394,343. Method for determining travel time of a signal in continuous-wave seismic prospecting. **46:** 1430—1969
Hampel, Robert H. (see Whiteside, Walter D.). **46:** 878—1969
Hance, Howard W. (see Bauer, Donald R.). **46:** 1110—1969
Hanes, Roger A. 3,411,395. Convertible bass drum beater. **46:** 1113—1969
Hannes, George J. and William P. Hahn. 3,239,973. Acoustical glass fiber panel with diaphragm action and controlled flow resistance. **46:** 876—1969
Hanstock, R. F., N. F. Godwin, R. F. Lumb, and M. A. Williams. 3,091,959. Ultrasonic inspection apparatus. **46:** 1117—1969
Hardy, Howard C. 3,254,739. Method and apparatus for measuring the sound absorption of acoustical materials. **46:** 1109—1969
Hare, Harold H. 3,346,070. Electronic organ speaker system. **46:** 1423—1969
Harris, Robert V. 3,435,664. Method and apparatus for evaluating the property of a liquid by acoustic means. **46:** 333—1969
Hassler, Otto. 3,458,668. Directional hearing aid. **46:** 1420—1969
Hayer, John, Jr., and Eric J. Straus. 3,252,016. Electromechanical transducer. **46:** 566—1969
Hazell, Norman C. (see Bryant, Herbert W.). **46:** 331—1969
Hearne, Joseph H. 3,358,069. Rhythm device. **46:** 1424—1969
Heinzl, Joachim L. 3,405,222. Multi-tone photoelectric musical instrument. **46:** 1427—1969
Helbourne, Margaret. 3,413,883. Stringed musical instrument. **46:** 332—1969
Hill, George M. 3,415,246. Ear fittings. **46:** 560—1969
Hill, Robert S. 3,367,227. Releasable coupling for piano action mechanism. **46:** 1422—1969
Hirsch, Sidney (see Catroppa, Frank A.). **46:** 1112—1969
Hoffman, Helmut. 3,418,437. Electro-acoustic transducer having a resonator cavity damped. **46:** 331—1969
Hogg, John E., Ernest K. Shaw, and George W. Smith. 3,409,872. Optical diffraction system for analyzing and processing seismic data. **46:** 566—1969
Horelick, Arnold L. (see Toothman, Lawrence R.). **46:** 879—1969
Horton, R. C. 3,462,803. Fastener for holding flexible sheet material and method for retaining such material. **46:** 1429—1969
Houck, J. R., H. V. Bohm, and B. W. Maxfield. 3,460,063. Ultrasonic transducer. **46:** 1420—1969
Howatt, G. N. 3,204,457. Ultrasonic flowmeter. **46:** 1118—1969
Howey, Friedrich (see Bostroem, Hans). **46:** 884—1969

Huffstutler, Miles C., Jr. and Becky T. Kerns. 3,437,764. Carbon transmitter with moving electrode fins for granule loosening and enhanced electrode coupling. **46:** 69—1969
Hurvitz, Hyman. 3,378,625. Electronic percussion instrument having interposed rhythmic patterns each with its own tone color. **46:** 1426—1969
Hutchins, Hugh A. 3,374,857. Muffler construction. **46:** 73—1969
Hutton, R. S. 3,212,756. Sound generator. **46:** 1117—1969

I

Irwin, Benjamin H. (see Ludlow, Edmund). **46:** 1114—1969 (2 patents)
Ishimura, Kazukiyo (see Mochida, Yasunori). **46:** 1423—1969
Ito, Michio. 3,418,877. Musical instrument construction. **46:** 71—1969

J

Jacke, Stanley E. (see Soloff, Robert S.). **46:** 334—1969
Jackson, Harold (see Boxer, Theodore). **46:** 566—1969
Jacobs, Marvin. 3,412,483. Device for reproducing sound from a card shaped record. **46:** 568—1969
Jenner, Pierre, Léon Sayous, and Rémi Larrieu. 3,429,396. Process for the production of machine-made waves and apparatus for practicing this process. **46:** 75—1969
Jenny, Hans. 3,407,897. Device for rendering visible acoustic vibrations. **46:** 561—1969
Johnson, Malcolm O. 3,434,562. Air feed device for valve retract system in pneumatic acoustic source. **46:** 567—1969
Johnson, Melvin E. 3,381,576. Piano key aligning means. **46:** 1422—1969
Johnston, Roy C. (see Brock, Fred A.). **46:** 567—1969
—— (see Davis, Billy W.). **46:** 1120—1969
Jones, Bernice L. 3,148,745. Noise attenuating apparatus for liquid conducting conduits. **46:** 1119—1969
Jones, James B. 3,203,215. Ultrasonic extrusion apparatus. **46:** 564—1969
Jones, Ralph S. 3,411,394. Fretted instrument tremolo-vibrato tuning system. **46:** 1114—1969
Jones, Ralph S., Sr. 3,429,214. Nut-mount for fingerboards. **46:** 878—1969
Joy, I. L. 3,205,702. Ultrasonic coupling device. **46:** 1118—1969
Juan, Ying-Tsai. 3,429,977. Device of chime communication by amplifying the sound of a music box. **46:** 878—1969
Judd, John E. (see Warner, Thomas C., Jr.). **46:** 336—1969

K

Kallmann, H. E. 3,204,455. Ultrasonic flowmeter. **46:** 1117—1969
Karn, James D. (see Amlott, Norman J.). **46:** 73—1969
Kaufman, I. (see Oltman, H. G., Jr.). **46:** 1420—1969
Kawabata, Yoshikazu and Maki Yamashita. 3,401,229. Electronic musical instrument of just intonation. **46:** 1427—1969
Kemp, William G. 3,241,282. Acoustical system. **46:** 876—1969
Kendig, Paul M. (see Bringman, Joseph M.). **46:** 568—1969
Kerns, Becky T. (see Huffstutler, Miles C., Jr.). **46:** 69—1969
Kiefer, Jacob C. 3,334,534. Voicing tab capture system. **46:** 1421—1969
Kjelstrom, Elmer. 3,433,115. Drum assembly. **46:** 562—1969
Knauert, William F. and Martin Molloy. 3,439,129. Acoustic frequency response adjustment. **46:** 560—1969
Korbet, Stephen. 3,339,442. Harpsichord plucking mechanism. **46:** 1422—1969
Kouril, Jaroslav. 3,433,669. Ultrasonic treating method and apparatus. **46:** 333—1969
Kowalik, Ronald F. 3,433,904. Semiconductor transducer. **46:** 71, 1113—1969
Krautkramer, J. 3,453,871. Method and apparatus for detecting flaws in materials. **46:** 1429—1969
Kuris, A. (see Balamuth, Lewis). **46:** 1117—1969

L

Lader, Allan N. 3,346,071. Muffler construction for motorcycles. **46:** 72—1969
Lahti, Uolevi L. 3,435,910. Semispherical loudspeaker. **46:** 330—1969
Lanes, Stanley S. (see Adam, Lewis). **46:** 879—1969
Lang, Harold M. (see Farr, John B.). **46:** 74—1969
Langer, Gerhard. 3,434,335. Apparatus for acoustically detecting minute particles suspended in a gaseous atmosphere. **46:** 335—1969
Langford, Byron G. 3,408,461. Hearing aid. **46:** 68—1969
Larrieu, Rémi (see Jenner, Pierre). **46:** 75—1969
Lawrence, Sidney J. 3,429,216. Music-note indicating device. **46:** 878—1969
—— 3,429,217. Music-note indicator. **46:** 877—1969
Lawson, Ronald N. (see Carnevale, Edmund H.). **46:** 75—1969
Lawther, James M. (see Bringman, Joseph M.). **46:** 568—1969
Lazzaro, Thomas A. 3,408,448. Magnetic keying for electronic organs. **46:** 1428—1969
LeCraw, Roy Conway (see Gyorgy, Ernst M.). **46:** 1112—1969
Leslie, Donald J. 3,372,225. Electronic musical instrument incorporating rotary electrostatic devices for producing celeste or chorus effects. **46:** 1425—1969
Lester, R. A. and J. H. Thompson. 3,209,591. Acoustic flow meter. **46:** 1118—1969
—— **and J. H. Thompson.** 3,214,973. Acoustic flow meter for measuring very slow fluid flow. **46:** 880—1969
Levinson, M. L. 3,451,401. Microwave ultrasonic apparatus. **46:** 1118—1969
Lighter, Stephen. 3,269,484. Acoustic absorbing structure. **46:** 1110—1969
Locklar, Henry C. (see Boggs, Raymond R., Jr.). **46:** 69—1969
Lonaberger, R. F. 3,082,580. Grinding apparatus and the like with ultrasonic control means. **46:** 1117—1969
Longwell, Thomas F. 3,435,157. Semiconductor transducer assembly. **46:** 70—1969
Loper, George B. 3,434,561. Fuel mixing and ignition system in pneumatic acoustic source. **46:** 567—1969
Lubinski, Arthur (see Blenkarn, Kenneth A.). **46:** 566—1969
Ludlow, Edmund and Benjamin H. Irwin. 3,146,850. Sound attenuating gas conduit. **46:** 1114—1969
—— **and Benjamin H. Irwin.** 3,146,851. Sound attenuating gas conduit and resonators therefor. **46:** 1114—1969
Lumb, R. F. (see Hanstock, R. F.). **46:** 1117—1969
Lynnworth, Lawrence C. (see Carnevale, Edmund H.). **46:** 75—1969

M

Maass, Gustav. 3,451,038. Echo sounding apparatus with adjustable sounding direction. **46:** 1431—1969
MacDonald, Donald. 3,255,843. Fibrous acoustical panel with continuously adhered surface film and method of making same. **46:** 1109—1969
Magneville, Pierre (see Cholet, Jacques). **46:** 1118—1969
Maher, Peter E. (see Schwartz, Harold O.). **46:** 1425—1969
Maklary, J. R. 3,213,677. Flaw detection recording. **46:** 1118—1969
Makous, L. 3,213,676. Ultrasonic inspection apparatus. **46:** 879—1969
Malkiewicz, Wladyslaw F. 3,290,121. Catalytic muffler embodying internal reservoir. **46:** 1115—1969

Malme, Charles I. and Bill G. Watters. 3,454,127. Method of and apparatus for reducing the bubble pulse from underwater explosions and pressure impulses. **46:** 883—1969
March, John. 3,265,154. Acoustical panels with spaced layers. **46:** 1110—1969
Markowitz, Jerome. 3,378,624. Electrical musical instrument with tremolo. **46:** 1425—1969
Maropis, Nicholas. 3,184,842. Method and apparatus for delivering vibratory energy. **46:** 70—1969
Martin, Richard T. (see Geib, Robert L.). **46:** 68—1969
Marx, Joseph P. 3,145,800. Mufflers. **46:** 1114—1969
Massa, Frank, Jr. 3,441,903. Electroacoustic transducer with improved electromagnetic drive. **46:** 1120—1969
Mast, Harm (see Ongkiehong, Leo). **46:** 75—1969
Maxfield, B. W. (see Houck, J. R.). **46:** 1420—1969
Maxwell, Vernon R. 3,426,639. Slide type musical wind instrument. **46:** 72—1969
May, Russell D. 3,200,567. System for the sonic treatment of emulsions and for resolving the same into their constituent parts. **46:** 564—1969
McCool, John M. and Shelby F. Sullivan. 3,409,869. Deep submergence acoustic transducer array construction. **46:** 884—1969
McKeown, Michael. (see Stickley, Elmer E.). **46:** 562—1969
McLoad, Kenneth W. 3,414,874. Seismic survey systems. **46:** 336—1969
McNab, Robert F. 3,439,392. Method and apparatus for texturizing synthetic thermoplastic yarns. **46:** 879—1969
Meimema, Herbert E. 3,363,202. Folded-line reverberation device. **46:** 1424—1969
Melita, Sebastiano. 3,406,603. Mute for stringed instruments. **46:** 563—1969
Melville, W. R. (see Fierle, E. J.). **46:** 880—1969
Merl, Carl J. 3,416,488. Sound producing device. **46:** 332—1969
Mettler, Hal C. 3,191,913. Ultrasonic unit. **46:** 70—1969
Miller, Charles P. 3,431,593. Ultrasonic hinge-sinking apparatus. **46:** 74—1969
Mitchell, Roscoe A. 3,449,852. Sound emitting fish lure. **46:** 1431—1969
Mochida, Yasunori and Kazukiyo Ishimura. 3,347,337. Reverberation loudspeaker. **46:** 1423—1969
Moisson, George M., Jr. (see Barnett, Burton). **46:** 1116—1969
Molloy, Martin (see Knauert, William F.). **46:** 560—1969
Mondot, Jacques. (see Beaujard, Louis). **46:** 564—1969
Mooney, Melvin. 3,427,915. Acoustic panels. **46:** 878—1969
Moore, Roy C. 3,435,408. Multimode hydrophone transducer simulator. **46:** 884—1969
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2.6 Noise Reduction by Increased Room Absorption

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4.2.3 Models of the Ear

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4.7 **Masking (see also 5.5.)**

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4.9 Pitch. Absolute Pitch

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Modulated frequency discrimination in relationship to age and musical training. Clifford K. Madsen, Frank A. Edmonson III, and Charles H. Madsen, Jr. **46:** 1468—1969
Parallel processing techniques for estimating pitch periods of speech in the time domain. B. Gold and L. Rabiner. **46:** 442—1969
Perceived pitch of whispered vowels. I. B. Thomas. **46:** 468—1969
Perstimulatory tracking in pitch perception at different sensation levels. Paul H. Skinner and Frank Antinoro. **46:** 426—1969
Signal duration and signal frequency in relation to auditory sensitivity. Charles S. Watson and Roy W. Gengel. **46:** 989—1969

Letters to the Editor

Some pitfalls in adaptive testing: comments on "Temporal integration and periodicity pitch" [R. A. Campbell and S. A. Counter, J. Acoust. Soc. Amer. **45,** 691–693 (1969)] C. Douglas Creelman and M. M. Taylor. **46:** 1581—1969

Abstracts

Errors in absolute judgment as a measure of pitch similarity. Walter H. Jesteadt. **46:** 88—1969
Frequency discrimination in the adapted ear. D. W. Nielsen, D. N. Elliott, and W. D. Fraser. **46:** 88—1969
Perstimulatory shifts in the difference limen for frequency. Robert C. Bilger, Lawrence L. Feth, and Walter H. Jesteadt. **46:** 80—1969

Pitch associated with an irregularity in the phase spectrum. David M. Green and James Patterson. **46:** 88—1969
Pitch control and pitch paradoxes demonstrated with computer-synthesized sounds. J. C. Risset. **46:** 88—1969
Pitch is voicing; manner is place. Mark P. Haggard. **46:** 97—1969
Proximity requirements for auditory asynchrony detection. Irwin Pollack. **46:** 121—1969

4.10 Subjective Tones

Papers

Combination tone $2f_1-f_h$ in microphonic potentials. Peter Dallos. **46:** 1437—1969
Relation between critical bands in hearing and the phase characteristics of cubic difference tones. M. R. Schroeder. **46:** 1488—1969
Some problems in the measurement of cochlear distortion. P. Dallos, Z. G. Schoeny, D. W. Worthington, and M. A. Cheatham. **46:** 356—1969

Letters to the Editor

Some pitfalls in adaptive testing: comments on "temporal integration and periodicity pitch" [R. A. Campbell and S. A. Counter, J. Acoust. Soc. Amer. **45**, 691–693 (1969)] C. Douglas Creelman and M. M. Taylor. **46:** 1581—1969

Abstracts

Pitch associated with an irregularity in the phase spectrum. David M. Green and James Patterson. **46:** 88—1969
Proximity requirements for auditory asynchrony detection. Irwin Pollack. **46:** 121—1969

4.11 Theories of Hearing

Papers

Click-intensity discrimination with and without a background masking noise. David H. Raab and Harvey B. Taub. **46:** 965—1969
Direct comparison between lateralization and detection under conditions of antiphasic masking. Ervin R. Hafter, Walter T. Bourbon, Anne S. Blocker, and Ann Tucker. **46:** 1452—1969
Effect of phase on the timbre of complex tones. R. Plomp and H. J. M. Steeneken. **46:** 409—1969
Intensity perception. I. Preliminary theory of intensity resolution. N. I. Durlach and L. D. Braida. **46:** 372—1969
Relation between critical bands in hearing and the phase characteristics of cubic difference tones. M. R. Schroeder. **46:** 1488—1969
Signal duration and signal frequency in relation to auditory sensitivity. Charles S. Watson and Roy W. Gengel. **46:** 989—1969
Temporal summation of loudness: an analysis. J. J. Zwislocki. **46:** 431—1969

Abstracts

Binaural detection of low-frequency tones as a function of noise level. W. A. Wilbanks and P. T. Cornelius. **46:** 126—1969
Hearing in the bullhead catfish (*ictalurus nebulosis*). Burton A. Weiss, George M. Hartig, and William F. Strother. **46:** 114—1969
Reconsideration of loudness adaptation. J. Petty, D. Elliott, and W. Fraser. **46:** 87—1969

4.12 Timbre

Papers

Effect of phase on the timbre of complex tones. R. Plomp and H. J. M. Steeneken. **46:** 409—1969
Relation between critical bands in hearing and the phase characteristics of cubic difference tones. M. R. Schroder. **46:** 1488—1969

4.14 Use of Ear Protectors, Earplugs

Abstracts

Manikin measurements of the noise attenuation provided by flight helmets. John R. Forstal. **46:** 119—1969

Patents

Protective and sound attenuation helmet. Frank A. Catroppa and Sidney Hirsch. **46:** 1112—1969
Sound attenuator attachment for a protective helmet. Charles E. Brenner. **46:** 1420—1969

4.15 Perception of Signals

Papers

Auditory random-walk discrimination. Irwin Pollack. **46:** 422—1969
Binaural interaction of transients: interaural intensity asymmetry. Harvey Babkoff and Samuel Sutton. **46:** 887—1969
Binaural masking: backward, forward, and simultaneous effects. Bruce H. Deatherage and Thomas R. Evans. **46:** 362—1969
Click-intensity discrimination with and without a background masking noise. David H. Raab and Harvey B. Taub. **46:** 965—1969
Comparison of ROC curves from one- and two-interval rating-scale procedures. Barry Leshowitz. **46:** 399—1969
Context and sequence effects with an adaptive threshold procedure. Richard A. Campbell. **46:** 350—1969
Continuity in alternately sounded tone and noise signals in a free field. L. F. Elfner. **46:** 914—1969
Depth of sequential auditory information processing. Irwin Pollack. **46:** 952—1969
FROC curve: a representation of the observer's performance for the method of free response. Harold Miller. **46:** 1473—1969
Intensity perception. I. Preliminary theory of intensity resolution. N. I. Durlach and L. D. Braida. **46:** 372—1969
Masking with continuous and pulsed sinusoids. David M. Green. **46:** 939—1969
Monaural detection with contralateral cue (MDCC). I. Better than energy detector performance by human observers. M. M. Taylor and S. M. Forbes. **46:** 1519—1969
Practice effects and signal detection indices in an auditory vigilance task. Jimmy L. Hatfield and David R. Soderquist. **46:** 1458—1969
Recognition of repeated patterns: a study of short-term auditory storage. Earl D. Schubert and Roger A. West. **46:** 1493—1969
Signal duration and signal frequency in relation to auditory sensitivity. Charles S. Watson and Roy W. Gengel. **46:** 989—1969
Thresholds *re* duration and levels of a continuous or gated masker. Richard A. Campbell. **46:** 895—1969

Letters to the Editor

Subject orientation and judgment of distance of a sound source. Robert E. Holt and Willard R. Thurlow. **46**: 1584—1969

Abstracts

Absolute thresholds for continuous and interrupted pure tones. Richard H. Ehmer and Barbara J. Ehmer. **46**: 87—1969

Binaural detection of low-frequency tones as a function of noise level. W. A. Wilbanks and P. T. Cornelius. **46**: 126—1969

Detection of increments in Gaussian noise by rhesus monkeys. Ben M. Clopton. **46**: 120—1969

Earmold influence on aided speech identification tasks. Jerry L. Northern and Karl W. Hattler. **46**: 81—1969

Hearing in the bullhead catfish (*ictalurus nebulosis*). Burton A. Weiss, George M. Hartig, and William F. Strother. **46**: 114—1969

Loudness discrimination as a function of attenuation rate and duration. Fred Harbert, Deanne Paris, and Claude Wenner. **46**: 87—1969

Masking effects of interrupted tonal stimuli upon pure tones. Beth Urban and Donald J. Baker. **46**: 121—1969

Minimum audible field measurements via Békésy audiometry. H. Geoffrey Fisher and Sanford J. Freedman. **46**: 95—1969

Monaural detection with contralateral cue (MDCC): masking the cue. M. M. Taylor and S. M. Smith. **46**: 126—1969

Monte Carlo simulation of adaptive psychophysical procedures. C. Douglas Creelman. **46**: 95—1969

Perceived rate of dichotically alternated clicks. A. W. F. Huggins. **46**: 88—1969

Perstimulatory shifts in the difference limen for frequency. Robert C. Bilger, Lawrence L. Feth, and Walter H. Jesteadt. **46**: 80—1969

Phase perception of transient signals having identical power spectra. James Patterson, Don A. Ronken, and David M. Green. **46**: 121—1969

Phase versus power discrimination for clicks. Don A. Ronken. **46**: 121—1969

Pitch control and pitch paradoxes demonstrated with computer-synthesized sounds. J. C. Risset. **46**: 88—1969

Proximity requirements for auditory asynchrony detection. Irwin Pollack. **46**: 121—1969

ROC curves determined under several experimental conditions. Barry Leshowitz. **46**: 121—1969

Scalp responses from human subjects evoked by contingent noise bursts. D. C. Teas, D. N. Nielsen, and R. P. Idzikowski. **46**: 113—1969

Sequence and bias effects while tracking thresholds. Richard A. Campbell. **46**: 95—1969

Simplified adaptive psychophysical procedure. Robert C. Bilger and Frank W. Conn. **46**: 95—1969

Some factors influencing the release from masking. Judith Menzer, Michel Loeb, and Richard P. Smith. **46**: 121—1969

Time-intensity trading ratios for narrow-band transients. Stanley Zerlin. **46**: 125—1969

4.16 Vibration and Tactile Senses

Technical Notes and Research Briefs

New phone enables the deaf to "see" messages, and the deaf and blind to "feel" them. **46**: 1409—1969

Abstracts

Scalp responses from human subjects evoked by contingent noise bursts. D. C. Teas, D. N. Nielsen, and R. P. Idzikowski. **46**: 113—1969

5 ACOUSTICAL INSTRUMENTS AND APPARATUS. (See also 2.8, 4.5, 9.6, 10.3, 12.3, 12.3p, 12.3z, 13.11, 13.11n, and 13.11t.)

5.1 General, Unclassified

Patents

Device for rendering visible acoustic vibrations. Hans Jenny. **46**: 561—1969

5.2 Amplifiers and Attenuators

Abstracts

Free oscillations of acoustical resonators and pressure effects on damping and amplification. Robert W. Troke. **46**: 118—1969

Method for measuring the surface impedance presented by a smooth surface to a sliding indenter. James V. White. **46**: 118—1969

Patents

Acoustically or electrically controlled fluid amplifiers. Jonathan E. Fine. **46**: 561—1969

5.3 Acoustic-Impedance Measurement. (See also 11.5 and 12.3z.)

Papers

Acoustic decoupling properties of onionskin paper. R. W. Higgs and L. J. Eriksson. **46**: 211—1969

Four-pole properties of an electroacoustic delay line with plane-concave transducers. L. J. van der Pauw. **46**: 508—1969

5.4 Analyzers and Filters, Acoustic and Electric. Oscillographs. Acoustic Delay Lines and Resonators. (See also 5.15 and 12.3f.)

Papers

Constants of a trapped-energy electromechanical transducer made by evaporating a thin layer of a piezoelectric crystal on each side of a quartz plate. W. P. Mason. **46**: 687—1969

Four-pole properties of an electroacoustic delay line with plane-concave transducers. L. J. van der Pauw. **46**: 508—1969

Free oscillations of acoustical resonators and pressure effects on damping and amplification. Robert W. Troke. **46**: 835—1969

Influence of diffraction on the four-pole impedances of electroacoustic delay lines with circular or rectangular plane-parallel transducers. L. J. van der Pauw. **46**: 497—1969

Methods for evaluating the performance of small acoustic filters. William S. Gatley and Raymond Cohen. **46**: 6—1969

Use of dispersive delay lines for signal processing in underwater acoustics. P. Tournois and J. Bertheas. **46**: 517—1969

Vibrations of contoured and partially plated, contoured, rectangular, AT-cut quartz plates. P. C. Y. Lee and Shoei-Sheng Chen. **46**: 1193—1969

Abstracts

Comments on the theory of the composite resonator. Jeffrey L. Bleustein. **46:** 104—1969

Free oscillations of acoustical resonators and pressure effects on damping and amplification. Robert W. Troke. **46:** 118—1969

Patents

Elastic wave elements. Ernst M. Gyorgy, Roy Conway LeCraw, and LeGrand G. VanUitert. **46:** 1112—1969

Phased transducer arrays for elastic wave transmission. Erich O. Schulz-DuBois. **46:** 329—1969

5.5 Audiometers. (See also 4.4 and 4.5.)

Papers

Frequency pattern of residual masking by pure tones measured on the Békésy audiometer. Richard H. Ehmer and Barbara J. Ehmer. **46:** 1445—1969

Abstracts

Automatic audiometer coupled to a data-acquisition system for animal use. C. Wilpizeski, F. Taylor, L. Kay, and W. Ramshaw. **46:** 94—1969

Effects of direction of frequency sweep on Békésy audiometry. I. M. Young and F. Harbert. **46:** 87—1969

Minimum audible field measurements via Békésy audiometry. H. Geoffrey Fisher and Sanford J. Freedman. **46:** 95—1969

5.7 Ear Protectors and Earplugs. (See also 4.14.)

Abstracts

Manikin measurements of the noise attenuation provided by flight helmets. John R. Forstal. **46:** 119—1969

New earphone cushion and mounting system for a protective helmet. Clayton H. Allen. **46:** 119—1969

Patents

Positioning means for sound attenuating ear cups on safety helmets. Jackson A. Aileo. **46:** 1112—1969

5.8 Loudspeakers, Horns, Measurements. Practical Sources. (See also 5.13, 5.17, and 5.18.)

Papers

Tentative method of producing diffuse sound fields. Auguste C. Raes. **46:** 831—1969

Letters to the Editor

Nearfield pressure distributions for a rigid and a flexing piston in an infinite soft baffle. G. F. Kuhn and F. A. Andrews. **46:** 859—1969

Technical Notes and Research Briefs

Electroacoustic horn. R. M. G. Boucher and J. Kreuter. **46:** 1406—1969

Abstracts

Directivity of underwater horns. A. P. Ripper, R. D. Finch, and D. Muster. **46:** 93—1969

Novel approach for obtaining high-intensity sound over a wide frequency range in a large reverberation room. Steve Dendrinos, Jr. **46:** 118—1969

Patents

Compliant annulus for loudspeaker and related circuit. Rudolph T. Bozak. **46:** 330—1969

Dynamic transducer with wall. David E. Thielen. **46:** 561—1969

Horn-loaded loudspeaker. Abraham B. Cohen. **46:** 330—1969

Loudspeaker assembly with loudspeaker supported by vibratory diaphragm. William S. Dunning. **46:** 69—1969

Mid-range speaker and enclosure combination. John Virva and Thor F. Olson. **46:** 877—1969

Package for radio. Herbert D. Van Sciver. **46:** 877—1969

Semispherical loudspeaker. Uolevi L. Lahti. **46:** 330—1969

Sound improving device. Samuel C. Anastin. **46:** 69—1969

Sound reproduction system. Edward L. Sechrist. **46:** 561—1969

Stereophonic speaker arrangement for a phonograph. Cornelius W. Christie. **46:** 69—1969

Thermoacoustic loudspeaker. James S. Arnold. **46:** 877—1969

5.9 Microphones. Microphone-Calibration Equipment and Techniques. (See also 5.18, 12.3p, and 13.11t.)

Papers

First-order gradient microphone based on the foil-electret principle: discrimination against air-borne and solid-borne noises. G. M. Sessler and J. E. West. **46:** 1081—1969

Some investigations on output level of microphones in air streams. Akira Nakamura, Rimpey Matsumoto, Akira sugiyama, and Tadami Tanaka. **46:** 1391—1969

Toroidal microphones. G. M. Sessler, J. E. West, and M. R. Schroeder. **46:** 28—1969

Letters to the Editor

Use of probe microphones to measure sound pressures in the ear. B. M. Johnstone and K. J. Taylor, **46:** 1404—1969

Technical Notes and Research Briefs

Acoustic detection of telephone cable breaks. **46:** 865—1969

Patents

Carbon transmitter with moving electrode fins for granule loosening and enhanced electrode coupling. Miles C. Huffstutler, Jr., and Becky T. Kerns. **46:** 69—1969

Stereophonic microphone. Motoyoshi Nakanishi. **46:** 331—1969

Unidirectional condenser microphone. Georg Neumann. **46:** 331—1969

5.10 Navigational Instruments Using Air Sound. Altitude-Measuring Instruments. Sound Ranging. (For Underwater Ranging, see 13.11n.)

Technical Notes and Research Briefs

Electromagnetic-acoustic probe. Leroy U. Rudasill. **46:** 862—1969

Patents

Echo ranging system for monitoring plurality of detection zones to determine presence or absence of objects. Arthur Nelkin and Frederick G. Geil. **46:** 1420—1969

Ultrasonic pulse distance measuring device. J. Dory. **46:** 1420—1969

5.11 Oscillators, Electrical and Mechanical

Papers

Resonance-bar damping measurements by the resonance-buildup technique. N. F. Fiore and R. M. Brach. **46:** 492—1969

5.12 Phase Meters

Papers

Measurement of the phase of vibrational displacement by a laser interferometer. M. R. Serbyn and F. A. Andrews. **46:** 2—1969

Technical Notes and Research Briefs

Computer controlled phase shifter for auditory localization experiments. J. Krauskopf and W. Kropfl. **46:** 315—1969

5.13 Sound-Reproducing Systems, Including Public-Address Systems, Stereophonic Reproduction

Papers

Image fusion, broadening, and displacement in sound location. Mark B. Gardner. **46:** 339—1969

Patents

Multipath focusing signal processor. Manfred R. Schroeder. **46:** 562—1969

5.15 Sound-Level Meters. Level Recorders. Sound-Pressure Measurement. (See also 5.4)

Papers

Ultralow frequency waves generated by the Saturn F-1 engine. Uri Fehr and L. C. McGahan. **46:** 485—1969

Letters to the Editor

Combining sound-pressure levels of unequal frequencies. S. C. Lou. **46:** 534—1969

Abstracts

Continuously swept technique for measuring sound absorption. William Siekman. **46:** 118—1969

Some typical sound-pressure levels of recorded "classical" music in home environments. John B. Crabtree and James J. Coles. **46:** 91—1969

5.16 Sound Recording and Reproducing. General

Patents

Electronic sound producing walking cane. Carl D'Amato. **46:** 331—1969

Vocal counter circuit. Joseph Roy De Priest. **46:** 562—1969

5.16d Mechanical Recording and Reproducing

Patents

Diaphragm and sound amplifier. Robert N. Aleson. **46:** 877—1969

5.16f Photographic Recording and Reproducing

Patents

Optical multiple track sound projector. Morris Schwartz and Werner K. Bender. **46:** 331—1969

Transparent recording disc. David Paul Gregg. **46:** 1112—1969

5.17 Telephones, Telephone Earphones. (See also 5.13.) Intercommunication Systems

Papers

Effect of circumaural earphone cushions on threshold sensitivity for speech. Charles Speaks. **46:** 1515—1969

Free-field calibration of earphones. Edgar Villchur. **46:** 1527—1969

Abstracts

New earphone cushion and mounting system for a protective helmet. Clayton H. Allen. **46:** 119—1969

Patents

Remote control matrix dictating system. Raymond R. Boggs, Jr., Henry C. Locklar, and L. Elwood West. **46:** 69—1969

Shock mounting for electromechanical transducer. Hermann K. Gummel and Vincent L. Rideout. **46:** 562—1969

Telephone headset with adjustable speech tube. Herbert W. Bryant, Norman C. Hazell, and Lionel W. Mosing. **46:** 331—1969

5.18 Transducing Principles, Structures and Materials, General. (See also 5.8, 5.9, 5.17, 10.3, 12.3p, 13.7, and 13.11t.)

Papers

Acoustic decoupling properties of Corprene DC-100. R. W. Higgs and L. J. Eriksson. **46:** 1254—1969

Acoustic decoupling properties of onionskin paper. R. W. Higgs and L. J. Eriksson. **46:** 211—1969

Dynamic stress and displacements in a two-material cable system subjected to longitudinal excitation. Jacques E. Goeller and Patricio A. Laura. **46:** 284—1969

Effects of noninstantaneous transducer response on the measurement of turbulent pressure. Wayne A. Strawderman. **46:** 1289—1969

Four-pole properties of an electroacoustic delay line with plane-concave transducers. L. J. van der Pauw. **46:** 508—1969

Influence of diffraction on the four-pole impedances of electroacoustic delay lines with circular or rectangular plane-parallel transducers. L. J. van der Pauw. **46:** 497—1969

Measurements on the effect of transducer size on the resolution of boundary-layer pressure fluctuations. F. E. Geib, Jr. **46:** 253—1969

Letters to the Editor

Displacement-transducer assembly used in studying the parallel-flow-induced vibration of reactor fuel rods. J. A. Jendrzejczyk and M. W. Wambganss, Jr. **46**: 826—1969

Abstracts

Acoustic lens studies. H. R. Feldman. **46**: 90—1969

Comments on the theory of the composite resonator. Jeffrey L. Bleustein. **46**: 104—1969

Conventional transducers—material functions. D. Haan. **46**: 90—1969

Development of a computer program directed towards the design of a high-resolution Cassegrainian sonar antenna. Attilla I. Simanyi. **46**: 92—1969

Engineering acoustics workshop: passive acoustic materials for underwater transducer applications. Introduction—objectives. R. W. Higgs. **46**: 90—1969

High-resolution Cassegrain sonar antenna. Harold E. Foster. **46**: 92—1969

Material selection—acoustic transmission problems. C. Johansen. **46**: 90—1969

Measurement of the phase of vibrational displacement by a laser interferometer. M. R. Serbyn and F. A. Andrews. **46**: 93—1969

Measurement techniques. R. W. Higgs. **46**: 90—1969

Method for measuring the surface impedance presented by a smooth surface to a sliding indenter. James V. White. **46**: 118—1969

Present status in the design of flextensional underwater acoustic transducers. Gerald A. Brigham and Larry H. Royster. **46**: 92—1969

Transducer materials studies. I. D. Groves. **46**: 90—1969

Patents

Acoustical light-signal translating apparatus. Robert Adler. **46**: 1113—1969

Electro-acoustic transducer having a resonator cavity damped. Helmut Hoffman. **46**: 331—1969

Electro-mechanical transducer. Abraham I. Dranetz and Hugh J. Cullin. **46**: 331—1969

Field effect electroacoustic transducer. Cornelis W. Reedyk. **46**: 332—1969

Magnetohydrodynamic-vortex stream transducer. John D. Brooks. **46**: 331—1969

Pressure-responsive semiconductor device. Wolfgang Touchy. **46**: 332—1969

Semiconductor transducer. Ronald F. Kowalik. **46**: 1113—1969

Semiconductor transducer assembly. Thomas F. Longwell. **46**: 70—1969

Shock-resistant microphone. Harry J. Boll. **46**: 332—1969

5.18d Electrodynamic Transducers

Patents

Ultrasonic transducer. J. R. Houck, H. V. Bohm, and B. W. Maxfield. **46**: 1420—1969

5.18f Magnetostrictive Transducers

Patents

Apparatus for limiting the motional amplitude of an ultrasonic transducer. Andrew Shoh. **46**: 562—1969

5.18g Electromagnetic Transducers

Abstracts

Surface waves on magnetic materials. H. Matthews. **46**: 104—1969

Patents

Subminiature sound transducers. George J. Sebesta and Richard W. Carlisle. **46**: 70—1969

5.18p Piezoelectric Transducers, Ferroelectrics

Papers

Calibration at high pressure of piezoelectric elements for deep-submergence hydrophones. T. A. Henriquez. **46**: 1251—1969

Constants of a trapped-energy electromechanical transducer made by evaporating a thin layer of a piezoelectric crystal on each side of a quartz plate. W. P. Mason. **46**: 687—1969

Excitation and detection of surface elastic waves in piezoelectric crystals. S. G. Joshi and R. M. White. **46**: 17—1969

Vibrations of contoured and partially plated, contoured, rectangular, *AT*-cut quartz plates. P. C. Y. Lee and Shoei-Sheng Chen. **46**: 1193—1969

Letters to the Editor

On the vibration of a thin piezoelectric disk with an arbitrary impedance on the boundary. Ralph A. Nelson, Jr., and Larry A. Royster. **46**, 828—1969

Thickness-twist vibrations of a piezoelectric plate. Morio Onoe. **46**: 1087—1969

Abstracts

Deposition of piezoelectric cadmium sulfide films from a single source of cadmium and sulfur vapor. D. Beecham. **46**: 104—1969

Dynamic shell theory for ferroelectric ceramics. Douglas S. Drumheller and Arturs Kalnins. **46**: 108—1969

Implementation of the gas squeeze-film foil bearing. Langdon H. Fulton. **46**: 118—1969

Surface wave propagation on piezoelectric materials. M. R. Daniel. **46**: 104—1969

Temperature dependence of the electroacoustical constants of Li-doped ZnO single crystals. R. T. Smith and V. E. Stufflefield. **46**: 105—1969

Theoretical and experimental study of modes of vibration in contoured, *AT*-cut quartz resonator plates. P. C. Y. Lee and G. T. Pearman. **46**: 104—1969

Patents

Electromechanical transducer system. Stanley R. Rich. **46**: 70—1969

Field effect electroacoustic transducer. Cornelis W. Reedyk. **46**: 332—1969

Method and apparatus for delivering vibratory energy. Nicholas Maropis. **46**: 70—1969

Method for joining piezoelectric elements. W. J. Trott and W. E. Radford. **46**: 1113—1969

Semiconductor transducer. Ronald F. Kowalik. **46**: 71—1969

Ultrasonic transducer. H. G. Oltman, Jr. and I. Kaufman. **46**: 1420—1969

Ultrasonic unit. Hal C. Mettler. **46**: 70—1969

5.21 Vibration Devices. Devices for Generating or Damping Vibrations. (See also 12, 12.3, 12.3i, 12.3p, and 12.3v.)

Papers

Reduction of the longitudinal vibration of internally damped rods having finite termination impedance. J. C. Snowdon. **46:** 1203—1969

Resonance-bar damping measurements by the resonance-buildup technique. N. F. Fiore and R. M. Brach. **46:** 492—1969

Letters to the Editor

Comments on "Frequencies of a hanging chain" [T. Huang and D. W. Dareing, J. Acoust. Soc. Amer. **45,** 1046–1049 (1969)] Patricio A. Laura. **46:** 1087—1969

Reply to "Comments on 'Frequencies of a hanging chain'" [P. A. Laura, J. Acoust. Soc. Amer. **46,** 1087 (1969)] Tseng Huang. **46:** 1087—1969

Reply to "Comments on 'Natural frequencies and modes of skew membranes'" [P. A. Laura, J. Acoust. Soc. Amer. **45,** 1281(L) (1969)] Somayajulu Durvasula. **46:** 1404—1969

Abstracts

Implementation of the gas squeeze-film foil bearing. Langdon H. Fulton. **46:** 118—1969

6 MUSIC AND MUSICAL INSTRUMENTS

6.1 General, Unclassified

Abstracts

Musical acoustics workshop: recording techniques for musical instruments. **46:** 91—1969

Patents

Automatically programmed piano. Robert Fried. **46:** 562—1969

Music-note indicator. Sidney J. Lawrence. **46:** 877—1969

Time and rhythm indicating device. Elmer E. Stickley and Michael McKeown. **46:** 562—1969

Book Reviews

Bird Song; Acoustics and Physiology. Crawford H. Greenewalt. (Reviewed by Hubert Frings.) **46:** 546—1969

Music by Computers. Heinz von Foerster and James W. Beauchamp, Eds. (Reviewed by Herbert M. Neustadt.) **46:** 1094—1969

News

Anechoic chamber music recording. **46:** 544—1969

6.2 Bells, Xylophones. Other Instruments having Rigid Vibrators

Patents

Device of chime communication by amplifying the sound of a music box. Ying-Tsai Juan. **46:** 878—1969

Sound-producing device for a toy figure. Robert Gardel and Egon Gorsky. **46:** 332—1969

Vibrating soundmaker. Carl Ayala. **46:** 71—1969

6.3 Brass Wind Instruments (Lip-Vibrated)

Abstracts

Generation of harmonics in the trumpet. John Backus and T. C. Hundley. **46:** 98—1969

Nonlinear characteristics of brass tones. James W. Beauchamp. **46:** 98—1969

Patents

Mouthpiece for brass musical instruments. Walter Zwolak. **46:** 1421—1969

Trumpet embouchure. Jerry R. Brooks. **46:** 1421—1969

6.4 Drums and Other Membranophonic Instruments

Patents

Convertible bass drum beater. Roger A. Hanes. **46:** 1113—1969

Drum assembly. Elmer Kjelstrom. **46:** 562—1969

Heads of drums, banjos, tympani and the like musical instruments. Abraham Isidore Elzas and Abraham Samuel Elzas. **46:** 71—1969

Musical instrument construction. Michio Ito. **46:** 71—1969

Tympani handle tension rod for drums. Josephus B. Thompson. **46:** 878—1969

6.5 Pipe Organs

Letters to the Editor

Comments on "A plea for conformity" [J. Backus, J. Acoust. Soc. Amer. **44,** 285(L) (1968)] Joseph Chapline. **46:** 475—1969

Reply to "Comments on 'A plea for conformity'" [J. Chapline, J. Acoust. Soc. Amer. **46,** 475(L) (1969)] John Backus. **46:** 476—1969

Sound radiation from the mouth of an organ pipe. John W. Coltman. **46:** 477—1969

Patents

Operational circuitry for pipe organs. Howard A. Burton. **46:** 1421—1969

Pipe for musical instruments. Gerhard J. Beisecker and Robert M. Fischer. **46:** 1421—1969

Program control system for organs or the like. Robert F. Cooper and Douglas E. Powell. **46:** 1421—1969

Voicing tab capture system. Jacob C. Kiefer. **46:** 1421—1969

6.6 Pianos and Other Keyboard Stringed Instruments

Patents

Action for keyboard instruments. René Seybold. **46:** 1422—1969

Apparatus for electrically actuating a musical instrument. Lee L. Von Gunten. **46:** 1422—1969

Apparatus for the production of music. Ernest Vagias. **46:** 1422—1969

Harpsichord plucking mechanism. Stephen Korbet. **46:** 1422—1969

Piano conditioner. John B. Habig and Maurice E. Schuler. **46:** 1422—1969

Piano key aligning means. Melvin E. Johnson. **46:** 1422—1969

Piano touch instructor apparatus. Loren R. Withers. **46:** 1421—1969

Piano tuning pin stabilizer. Emmett H. West. **46:** 1422—1969

Releasable coupling for piano action mechanism. Robert S. Hill. **46:** 1422—1969

6.7 Violin Family. Stringed Instruments, Except Keyboard Type

Abstracts

Acoustic properties of wood. Yoshimasa Sakurai and Eugen J. Skudrzyk. **46:** 124—1969

Bowed string, the. John C. Schelleng. **46:** 123—1969

Constructional principles for bow instruments applied to violino grande, the five-stringed new member of the violin family. Hans Olof Hansson. **46:** 120—1969

Directivity of the string instruments and its influence on the orchestra sound in concert halls. Jurgen Meyer. **46:** 120—1969

"Dramatic suite for new violins." Frank Lewin. **46:** 103—1969

Measuring the wood resonances of treble viol plates by hologram interferometry. Carl-Hugo Ågren and Karl A. Stetson. **46:** 120—1969

Mezzo violin. Yoko Matsuda and C. M. Hutchins. **46:** 103—1969

Research potentials in auditory characteristics of violin tone. Paul C. Boomsliter and Warren Creel. **46:** 123—1969

Soprano viol (magnum). Carl Hugo Ågren. **46:** 103—1969

Spectrum measurements in a somewhat reverberant room. A. H. Benade. **46:** 119—1969

Time-varying spectra of violin tones. James W. Beauchamp. **46:** 123—1969

Violino grande. Bronislaw Eichenholz and Hans Olof Hansson. **46:** 103—1969

Patents

Acoustic panels. Melvin Mooney. **46:** 878—1969

Chord-forming device for stringed instrument. Gordon E. Bradt. **46:** 563—1969

Electrically operated music cuing system. Dorothea M. Weitzner. **46:** 563—1969

Fretted instrument tremolo-vibrato tuning system. Ralph S. Jones. **46:** 1114—1969

Guitar and adjustable mute therefor. Clarence L. Fender. **46:** 878—1969

Inclined guitar body. Walter E. Smith. **46:** 72—1969

Instruction fingerboard for string instruments. Bernard Quinton. **46:** 563—1969

Mechanical tuning peg for stringed instruments. Kenneth C. Clark. **46:** 71—1969

Musical instrument with string tension adjustment. Joe B. Downing. **46:** 563—1969

Musical Instruments (2 patents). Walter E. Smith. **46:** 1113—1969

Mute for stringed instruments. Sebastiano Melita. **46:** 563—1969

Neck construction for a stringed musical instrument. Jack C. Cookerly and George R. Hall. **46:** 71—1969

Nut-mount for fingerboards. Ralph S. Jones, Sr. **46:** 878—1969

Stringed instrument having improved tuning and chording means. John W. Ryan. **46:** 1114—1969

Stringed instrument neck construction. John Dopyera. **46:** 71—1969

Stringed musical instrument. Margaret Helbourne. **46:** 332—1969

Tone generation system. Jack C. Cookerly and George R. Hall. **46:** 1113—1969

Tuner for stringed musical instruments. John W. Pease. **46:** 563—1969

6.8 Wood Winds

Patents

Drinking straw and tone generator. Henry Kurt Stoessel and Tomas Newbery. **46:** 1114—1969

Key pads for musical instruments. Leland B. Greenleaf and James Timothy Bryant. **46:** 878—1969

Musical instrument bearing insert. Walter D. Whiteside and Robert H. Hampel. **46:** 878—1969

Slide type musical wind instrument. Vernon R. Maxwell. **46:** 72—1969

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6.9 Electrical Musical Instruments

Letters to the Editor

Approximating the frequencies of the musical scale with digital counter circuits. Roelif Stapelfeldt. **46:** 478—1969

Patents

Acoustical apparatus. Christopher M. Gundlach. **46:** 1427—1969

All harmonic wave frequency divider. Ray B. Schrecongost. **46:** 1427—1969

Apparatus for mounting a tone generator and for positioning the same relative to a transducer. Harold B. Rhodes. **46:** 1426—1969

Chiff system for electronic organs. Dale M. Uetrecht. **46:** 1427—1969

Chord organ switching circuit for selectively playing either chords or single notes by depressing one key. John R. Brand and Stanley Cutler. **46:** 1424—1969

Chorus effects systems. Alfred B. Freeman. **46:** 1424—1969

Electric organ polyphonic percussion system having multiple use keyers. Ray B. Schrecongost. **46:** 1428—1969

Electrical accordion-organ. Thomas F. Bright. **46:** 563—1969

Electrical musical instrument with tremolo. Jerome Markowitz. **46:** 1425—1969

Electrical organ. William C. Wayne, Jr. **46:** 1427—1969

Electronic accordion with hinged keyboard and contact plate. Paolo Settimio Soprami. **46:** 72—1969

Electronic keyer. Mathew A. Slaats. **46:** 1427—1969

Electronic musical instrument. David G. Olson. **46:** 1426—1969

Electronic musical instrument incorporating rotary electrostatic devices for producing celeste or chorus effects. Donald J. Leslie. **46:** 1425—1969

Electronic musical instrument of just intonation. Yoshikazu Kawabata and Maki Yamashita. **46:** 1427—1969

Electronic organ. Thomas W. Cunningham. **46:** 1423—1969

Electronic organ. Leonard W. Pavia. **46:** 1428—1969

Electronic organ arpeggio effect device. Alan C. Young. **46:** 1424—1969

Electronic organ speaker system. Harold H. Hare. **46:** 1423—1969

Electronic percussion instrument having interposed rhythmic patterns each with its own tone color. Hyman Hurvitz. **46:** 1426—1969

Electronic tremulant device particularly for electronic organs. John Szabo. **46:** 1425—1969
Folded-line reverberation device. Herbert E. Meinema. **46:** 1424—1969
Keyboard switch assembly with improved contact means. Charles A. Dyle. **46:** 1426—1969
Magnetic keying for electronic organs. Thomas A. Lazzaro. **46:** 1428—1969
Method of tuning an electronic tone generator. Andrei Alexandrovich Volodin. **46:** 1424—1969
Multi-tone photoelectric musical instrument. Joachim L. Heinzl. **46:** 1427—1969
Organ portamento system. Rame W. Bull, William C. Ring, and Ray B. Schrecongost. **46:** 1425—1969
Organ tone chamber. Leonard Pavia. **46:** 1426—1969
Percussion circuit for electronic organs. Paul H. Sharp. **46:** 1426—1969
Post signal modulation in electronic musical instruments. Harold O. Schwartz and Peter E. Maher. **46:** 1425—1969
Reverberation loudspeaker. Yasunori Mochida and Kazukiyo Ishimura. **46:** 1423—1969
Rhythm device. Joseph H. Hearne. **46:** 1424—1969
Sampling tone generator system for electronic organs. Walter Munch, Jr., and Alfred W. Scheide. **46:** 1424—1969
Sound reproducing system. Wallace R. Behnke and Curt R. R. Wolfanger. **46:** 1428—1969
Tone level control circuit. Jack C. Cookerly and George Robert Hall. **46:** 1423—1969
Transistor circuit providing vibrato effects for electrically operated musical instruments. Henry B. Padgett. **46:** 1423—1969
Tremolo-vibrato circuitry for use with a simulated moving sound source or the like. Donald M. Park. **46:** 1425—1969
Tremulant device for electronic organs utilizing rotating-core output transformer. John Szabo. **46:** 1427—1969

6.10 Reed Organs. Accordions, Harmonicas

Patents

Sound producing device. Carl J. Merl. **46:** 332—1969

6.12 Intonation. Vibrato. Musical Scales. Musical Composition

Letters to the Editor

Approximating the frequencies of the musical scale with digital counter circuits. Roelif Stapelfeldt. **46:** 478—1969

Patents

Music-note indicating device. Sidney J. Lawrence. **46:** 878—1969

6.13 Electronic Music

Abstracts

Derivative synthesis of musical instrument tones. Eric Gschwandtner. **46:** 98—1969

News

Course in electronic music at Cornell. **46:** 1415—1969

7 NOISE AND NOISE CONTROL

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Papers

Estimation of periodic signals in noise. Thomas G. Kincaid and Henry J. Scudder III. **46:** 1397—1969

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Abstracts

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News

Acoustics and noise control course. **46:** 868—1969
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Noise in manufacturing plants. **46:** 541—1969
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7.2 Annoyance. Effect of Noise on Human Beings

Abstracts

Acoustics of open plan spaces—some case histories. P. W. Hirtle, B. G. Watters, and W. J. Cavanaugh. **46:** 91—1969
Application of noise-exposure forecast contours to noise-reduction tradeoff studies. Dwight E. Bishop and Richard Horonjeff. **46:** 85—1969
Are we going the right way? Z. D. Angeluscheff. **46:** 84—1969
Cochlear damage resulting from exposure to high-intensity "hard rock" music. David M. Lipscomb. **46:** 80—1969
Computation of perceived noise level. R. J. Wells. **46:** 85—1969
Computerized noise-measurement system. Wisu T. Kapuskar. **46:** 85—1969
Effect of noise from passing trucks on sleep. G. J. Thiessen. **46:** 98—1969
Effect of noise on people of different cultures. Samuel Rosen. **46:** 112—1969
Form of equal-attribute contours for predicting subjective response to noise. Hugh J. Parry. **46:** 85—1969
Further study of the operational definitions of loudness level and perceived noise level. J. E. Mabry, V. V. R. Cohen, and J. W. Little. **46:** 85—1969
In retrospect: how to buy a quiet garbage truck. David C. Apps. **46:** 112—1969
Is the perceived-noise-level calculation procedure better now than when it was first introduced? J. W. Little and J. E. Mabry. **46:** 85—1969
NASA duct lining research program. John G. Lowry. **46:** 77—1969
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Status report on the SAE R-6 Research Committee. Hugh J. Parry and John W. Little. **46:** 85—1969

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7.4 Community Noise

Technical Notes and Research Briefs

British pilots may ignore airport noise rules. **46:** 865—1969

Abstracts

Application of duct-lining technology to jet aircraft. A. H. Marsh. **46:** 78—1969
Structural and environmental studies of duct-lining acoustical materials. H. A. Watson, Jr. **46:** 78—1969
Theoretical model for steady-state urban noise. E. A. G. Shaw and N. Olson. **46:** 99—1969
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7.5 Noise Spectra

Abstracts

Effect of velocity on subjective noise levels. J. W. Vogel and D. F. Blakney. **46:** 99—1969
Noise radiation from hermetic reciprocating compressors. Douglas J. Ingalls. **46:** 99—1969

7.6 Noise in Buildings. (See also 2.2.)

Abstracts

Central-heating noise in a one-family house. F. Michael Strumpf and Kaj Ovesen. **46:** 92—1969
Vibration-isolation treatment of a railroad track bed. Laymon N. Miller. **46:** 99—1969

7.7 Machinery Noise. Mufflers. Noise Silencers

Papers

Ultralow frequency waves generated by the Saturn F-1 engine. Uri Fehr and L. C. McGahan. **46:** 485—1969

Technical Notes and Research Briefs

Porous steel for noise reduction. **46:** 865—1969

Abstracts

Acoustic lining concepts and materials for engine ducts. R. A. Mangiarotty. **46:** 77—1969
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Patents

Acoustic curb. Robert C. Greenheck. **46:** 73—1969
Acoustical attenuators. Willard N. Nopper **46:** 1116—1969
Air cleaner and silencer assembly. Norman J. Amlott and James D. Karn. **46:** 72—1969
Air cleaner and silencer assembly. William D. Pittsley. **46:** 73—1969
Catalytic muffler embodying internal reservoir. Wladyslaw F. Malkiewicz. **46:** 1115—1969
Exhaust muffler. Dean G. Thomas. **46:** 1114—1969
Exhaust pipe silencers with telescoped gas passage tubes. Floyd E. Deremer. **46:** 1428—1969
Mounting means. Burton Barnett, George M. Moisson, Jr., and Robert J. Pietka. **46:** 1116—1969
Muffler. Peter G. Andrews. **46:** 1114—1969
Muffler. Eldred G. Straw. **46:** 72—1969
Muffler constructed to vaporize condensate from inner chambers. Walter H. Powers. **46:** 1114—1969
Muffler construction. Hugh A. Hutchins. **46:** 73—1969
Muffler construction for motorcycles. Allan N. Lader. **46:** 72—1969
Muffler with chambers formed by three concentric tubes. Eldred G. Straw. **46:** 72—1969
Muffler with frusto-conical baffle members spaced along central tube. William A. Moss and Rose E. Griffin. **46:** 73—1969
Muffler with return bend tuning passage. Walter H. Powers. **46:** 1115—1969
Muffler with spaced concentric tubular members. James H. Selig. **46:** 72—1969
Mufflers. Joseph P. Marx. **46:** 1114—1969
Noise reducing means for electrical apparatus. Theodore R. Specht and Gwyn N. Crump. **46:** 1115—1969
Noise reduction structure for mixing valve. Richard G. Parkinson. **46:** 1115—1969
Resonator silencer. Thomas R. Cassel. **46:** 73—1969
Sound attenuating gas conduit. Edmund Ludlow and Benjamin H. Irwin. **46:** 1114—1969
Sound attenuating gas conduit and resonators therefor. Edmund Ludlow and Benjamin H. Irwin. **46:** 1114—1969
Sound attenuation for vacuum-type debris collector. Ben Daneman. **46:** 1115—1969
Sound muting and filtering device. Wilhelm S. Everett. **46:** 1116—1969
Stationary induction apparatus having sound attenuating means. Lawrence R. Toothman and Arnold L. Horelick. **46:** 879—1969

7.8 Noise Generators (Solid, Liquid, and Gaseous). Sirens

Papers

Transmission of noise from a turbulent boundary layer through a flexible plate into a closed cavity. E. H. Dowell. **46:** 238—1969

Abstracts

Noise control of aircraft iron-core electrical components. David H. Reed. **46:** 99—1969

Patents

Engine sound simulator. Harry W. Field. **46:** 74—1969

7.10 Aerodynamic Noise. Jet Noise

Papers

Atmospheric correction factor for sonic-boom pressure amplitudes. Allan D. Pierce and Charles L. Thomas. **46:** 1366—1969

Physics of flow noise, the. G. P. Haddle and E. J. Skudrzyk. **46:** 130—1969

Some investigations on output level of microphones in air streams. Akira Nakamura, Rimpey Matsumoto, Akira Sugiyama, and Tadami Tanaka. **46:** 1391—1969

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British pilots may ignore airport noise rules. **46:** 865—1969

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Abstracts

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Acoustic shock emission of high-speed nozzles. Abraham C. Peter. **46:** 100—1969

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Duct acoustic lining technology for application to turbofan engines. J. Atvars and R. A. Mangiarotty. **46:** 78—1969

Effect of velocity on subjective noise levels. J. W. Vogel and D. F. Blakney **46:** 99—1969

Form of equal-attribute contours for predicting subjective response to noise. Hugh J. Parry. **46:** 85—1969

Model experiment on variability of sonic-boom signatures. Bruce A. Davy and David T. Blackstock. **46:** 101—1969

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Potential of high-intensity noise testing. C. T. Morrow. **46:** 83—1969

Sonic-boom propagation in a random atmosphere. Allan D. Pierce. **46:** 101—1969

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Patents

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News

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8 STANDARDS

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Abstracts

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Status report on the SAE R-6 Research Committee. Hugh J. Parry and John W. Little. **46:** 85—1969

News

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9 SPEECH COMMUNICATION

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Papers

Effect of air bubbles in the external auditory meatus on underwater hearing thresholds. Harry Hollien and John F. Brandt. **46:** 384—1969

Effect of circumaural earphone cushions on threshold sensitivity for speech. Charles Speaks. **46:** 1515—1969

News

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9.2 Anatomy and Physiology of the Larynx and Vocal Tract

Papers

Ultrasonic observations of coarticulation in the pharynx. C. A. Kelsey, R. J. Woodhouse, and F. D. Minifie. **46:** 1016—1969

Vocal-tract characteristics of the stop cognates. R. D. Kent and K. L. Moll. **46:** 1549—1969

Letters to the Editor

EMG electrode for the diaphragm. Thomas J. Hixon, Arthur A. Siebens, and Fred D. Minifie. **46:** 1588—1969

Ultrasonic Doppler monitoring of vocal-fold velocity and displacement. J. L. Beach and C. A. Kelsey. **46:** 1045—1969

Abstracts

Determination of vocal tract shape from acoustical measurements. B. Gopinath and M. M. Sondhi. **46:** 110—1969

Developments in transducers for studying linguopalatal contacts. R. L. Paterson, W. R. Proffit, and R. E. McGlone. **46:** 96—1969

Effect of glottal pulse shape on the quality of natural vowels. A. E. Rosenberg. **46:** 82—1969

Method of direct determination of subglottal pressure. Yasuo Koike. **46:** 96—1969

Oral and nasal sound-pressure levels as related to presence or absence of velopharyngeal closure. Raymond Massengill, Jr., L. H. Royster, Thomas Walker, and Susan Maxwell. **46:** 96—1969

Relationship of lingual and intraoral air pressure during consonant production. W. S. Brown, Jr. **46:** 96—1969

Vocal-tract characteristics of voiced and voiceless stop consonants. Raymond Kent and Kenneth L. Moll. **46:** 96—1969

Vocal-tract limitations on the vowel repertoires of rhesus monkey and other nonhuman primates. Philip Lieberman, Dennis L. Klatt, and William A. Wilson. **46:** 97—1969

9.3 Acoustic Analysis of Speech

Papers

Acoustic properties of certain VCC utterances. K. M. N. Menon, Paul J. Jensen, and Donald Dew. **46:** 449—1969

Automatic speaker verification using cepstral measurements. James E. Luck. **46:** 1026—1969

Correlation characteristics and dimensionality of speech spectra. K. -P. Li, G. W. Hughes, and A. S. House. **46:** 1019—1969

Effect of acoustic cues in fricatives on perceptual confusions in preschool children. Mary Skeel Abbs and Fred D. Minifie. **46:** 1535—1969

Parallel processing techniques for estimating pitch periods of speech in the time domain. B. Gold and L. Rabiner. **46:** 442—1969

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Ultrasonic observations of coarticulation in the pharynx. C. A. Kelsey, R. J. Woodhouse, and F. D. Minifie. **46:** 1016—1969

Letters to the Editor

Intraoral air pressures for /p/ in oral and whispered vowel environments. Martin F. Schwartz. **46:** 480—1969

Note on the range of estimates of F_1 and F_2 in German, English, and Chinese. D. N. Sherman. **46:** 1590—1969

Abstracts

Acoustic feature analysis of several Arabic consonants. Dennis H. Klatt and Kenneth N. Stevens. **46:** 110—1969

Acoustic measurements for speaker recognition. Jared J. Wolf. **46:** 89—1969

Analysis of vowels produced by Spanish and English speakers. K. N. Stevens and Mary M. Klatt. **46:** 110—1969

Effect of glottal pulse shape on the quality of natural vowels. A. E. Rosenberg. **46:** 82—1969

Evidence for quantal vowel articulations. K. N. Stevens. **46:** 110—1969

First-formant transitions as a cue to place of articulation. Pierre Delattre. **46:** 110—1969

Functional model of perception and its application to speech processing. Myron J. Ross. **46:** 81—1969

Oral and nasal sound-pressure levels as related to presence or absence of velopharyngeal closure. Raymond Massengill, Jr., L. H. Royster, Thomas Walker, and Susan Maxwell. **46:** 96—1969

Real-time digital-cepstrum-pitch extraction on a 12-bit machine. Joseph DeLellis, Richard L. Freudberg, Calvin R. Howard, Harold J. Manley, and Harry Shaffer. **46:** 81—1969

Vocal-tract limitations on the vowel repertoires of rhesus monkey and other nonhuman primates. Philip Lieberman, Dennis L. Klatt, and William A. Wilson. **46:** 97—1969

9.4 Speech Synthesis

Papers

Perception of vocoder-speech processed by pattern matching. Caldwell P. Smith. **46:** 1562—1969

Abstracts

Computer-controlled PCM system for investigation of dichotic speech perception. Franklin S. Cooper and Ignatius G. Mattingly. **46:** 115—1969

Digital equivalent vocoder analyzer. R. F. Munnich. **46:** 82—1969

Pitch synchronous vocoder. Steven J. Davis. **46:** 81—1969

Speech generation with a computer simulated vocal-tract analog. P. Ruiz and P. Mermelstein. **46:** 110—1969

Speech synthesis by rules with physiological parameters. Shizuo Hiki and Richard Harshman. **46:** 111—1969

9.5 Perception of Speech and Speechlike Sounds. (See also 4.15.)

Papers

Effect of acoustic cues in fricatives on perceptual confusions in preschool children. Mary Skeel Abbs and Fred D. Minitie. **46:** 1535—1969

Effect of pulsed masking on selected speech materials. Donald D. Dirks, Richard H. Wilson, and Deborah R. Bower. **46:** 898—1969

Identification of the "shift" between vocal registers. Robert E. McGlone and William S. Brown, Jr. **46:** 1033—1969

Image fusion, broadening, and displacement in sound location. Mark B. Gardner. **46:** 339—1969

Influence of pulsed masking on the threshold for spondees. Richard H. Wilson and Raymond Carhart. **46:** 998—1969

Loudness judgments of speech and nonspeech stimuli. Maurice I. Mendel, Harvey M. Sussman, Richard M. Mersen, Margaret Ann Naeser, and Fred D. Minifie. **46:** 1556—1969

Perceived pitch of whispered vowels. I. B. Thomas. **46:** 468—1969

Perceptual and physical space of vowel sounds. L. C. W. Pols, L. J. Th. van der Kamp, and R. Plomp. **46:** 458—1969

Vocal loudness and effort in continuous speech. John F. Brandt, Kenneth F. Ruder, and Thomas Shipp, Jr. **46:** 1543—1969

Abstracts

Computer-controlled PCM system for investigation of dichotic speech perception. Franklin S. Cooper and Ignatius G. Mattingly. **46:** 115—1969

Diver-to-diver speech intelligibility of underwater communication systems. Harry Hollien and Robert F. Coleman. **46:** 115—1969

Estimating the intelligibility of continuous discourse. Charles Speaks. **46:** 115—1969

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Interaural switching effects on the recognition of consonants. John A. Rupf, George W. Hughes, and Arthur S. House. **46:** 114—1969

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Laterality effects in the recall of steady-state and transient speech sounds. C. J. Darwin. **46**: 114—1969
Listener judgments of vocal loudness and effort in continuous speech. John F. Brandt. **46**: 96—1969
Oral and nasal sound-pressure levels as related to presence or absence of velopharyngeal closure. Raymond Massengill, Jr., L. H. Royster, Thomas Walker, and Susan Maxwell. **46**: 96—1969
Perception of semivowels and laterals. Mark P. Haggard. **46**: 115—1969
Vowel identification in isolation and in word context. Richard M. Sachs and Dennis H. Klatt. **46**: 115—1969

9.6 Measures of Speech Intelligibility, Quality, Information Content

Papers

Perception of vocoder speech processed by pattern matching. Caldwell P. Smith. **46**: 1562—1969

Letters to the Editor

Some comments on learning associated with the articulation testing of mistuned single-sideband links. E. J. Kneen and J. V. Hanson. **46**: 1047—1969
Whither speech recognition? J. R. Pierce. **46**: 1049—1969

Abstracts

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On-line evaluation of three HeO_2 speech unscramblers. Harry Hollien and James Malone. **46**: 82—1969
Perceptual structure of English vowels. Sadanand Singh, Ikmo Lee, and David Woods. **46**: 116—1969

9.7 Phonetics, Linguistics, Statistics of Language

Papers

Perceived pitch of whispered vowels. I. B. Thomas. **46**: 468—1969
Perceptual and physical space of vowel sounds. L. C. W. Pols, L. J. Th. van der Kamp, and R Plomp. **46**: 458—1969

Letters to the Editor

Alterations in the duration, pitch, and intensity of spoken passages successively heard and repeated several times. Marlin Spike Werner. **46**: 1051—1969
Influence of vowel environment upon the duration of /s/ and /ʃ/. Martin F. Schwartz. **46**: 480—1969
Intraoral air pressures for /p/ in oral and whispered vowel environments. Martin F. Schwartz. **46**: 480—1969
Note on the range of estimates of F_1 and F_2 in German, English, and Chinese. D. N. Sherman. **46**: 1590—1969

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Acoustic feature analysis of several Arabic consonants. Dennis H. Klatt and Kenneth N. Stevens. **46**: 110—1969
Acquisition of syntax. David McNeill. **46**: 101—1969
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Certain aspects of the development of speech production and perception in children. Malcolm S. Preston, Grace H. Yeni-Komshian, and Rachel E. Stark. **46**: 102—1969
Empirical studies of linguistic universals in very young children. Thomas G. Bever. **46**: 101—1969
Evidence for quantal vowel articulations. K. N. Stevens. **46**: 110—1969
First-formant transitions as a cue to place of articulation. Pierre Delattre. **46**: 110—1969
Model for generating on-off speech patterns in two-way conversation. Paul T. Brady. **46**: 109—1969
Perceptual structure of English vowels. Sadanand Singh, Ikmo Lee, and David Woods. **46**: 116—1969
Pitch is voicing; manner is place. Mark P. Haggard. **46**: 97—1969
Selected vowel-consonant learning by preschool children. J. H. Gilbert. **46**: 110—1969
Studying children's acquisition of phonology. Paula Menyuk. **46**: 102—1969
Vocal-tract characteristics of voiced and voiceless stop consonants. Raymond Kent and Kenneth L. Moll. **46**: 96—1969
Vocal-tract limitations on the vowel repertoires of rhesus monkey and other nonhuman primates. Philip Lieberman, Dennis L. Klatt, and William A. Wilson. **46**: 97—1969

9.8 Systems for Speech Transmission. Analysis-Synthesis Telephony, Speech Coding

Papers

Parallel processing techniques for estimating pitch periods of speech in the time domain. B. Gold and L. Rabiner. **46**: 442—1969
Perception of vocoder speech processed by pattern matching. Caldwell P. Smith. **46**: 1562—1969

Letters to the Editor

Some comments on learning associated with the articulation testing of mistuned single-sideband links. E. J. Kneen and J. V. Hanson. **46**: 1047—1969

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New phone enables the deaf to "see" messages, and the deaf and blind to "feel" them. **46**: 1409—1969

Abstracts

Digital equivalent vocoder analyzer. R. F. Munnich. **46**: 82—1969
Functional model of perception and its application to speech processing. Myron J. Ross. **46**: 81—1969
Model for generating on-off speech patterns in two-way conversation. Paul T. Brady. **46**: 109—1969
Pitch synchronous vocoder. Steven J. Davis. **46**: 81—1969

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Fundamental frequency extractor for voice signals Lawrence E. Cassel. **46**: 333—1969
Process and apparatus for cueing orators. Martin P. Winther. **46**: 74—1969
Speech analysis system. Genung L. Clapper. **46**: 563—1969
Voice signal processing and phase equalizing for SSB system. Fred A. Brooks. **46**: 564—1969

9.9 **Instruments for Speech Measurement**

Papers

Parallel processing techniques for estimating pitch periods of speech in the time domain. B. Gold and L. Rabiner. **46**: 442—1969

Letters to the Editor

EMG electrode for the diaphragm. Thomas J. Hixon Arthur A. Siebens, and Fred D. Minifie. **46**: 1588—1969

Ultrasonic Doppler monitoring of vocal-fold velocity and displacement. J. L. Beach and C. A. Kelsey. **46**: 1045—1969

Abstracts

Developments in transducers for studying linguopalatal contacts. R. L. Paterson, W. R. Proffit, and R. E. McGlone. **46**: 96—1969

Functional model of perception and its application to speech processing. Myron J. Ross. **46**: 81—1969

Method of direct determination of subglottal pressure. Yasuo Koike. **46**: 96—1969

On-line evaluation of three HeO_2 speech unscramblers. Harry Hollien and James Malone. **46**: 82—1969

Oral and nasal sound-pressure levels as related to presence or absence of velopharyngeal closure. Raymond Massengill, Jr., L. H. Royster, Thomas Walker, and Susan Maxwell. **46**: 96—1969

9.10 **Machine Recognition of Speech**

Letters to the Editor

Whither speech recognition? J. R. Pierce. **46**: 1049—1969

Papers

Automatic speaker verification using cepstral measurements. James E. Luck. **46**: 1026—1969

Correlation characteristics and dimensionality of speech spectra. K.-P. Li, G. W. Hughes, and A. S. House. **46**: 1019—1969

Abstracts

Acoustic measurements for speaker recognition. Jared J. Wolf. **46**: 89—1969

Application of distribution-free tolerance regions to automatic speaker verification. Guy Beakley and Franz B. Tuteur. **46**: 90—1969

Computer-controlled PCM system for investigation of dichotic speech perception. Franklin S. Cooper and Ignatius G. Mattingly. **46**: 115—1969

Computer recognition of single-syllable English words. Mark Medress. **46**: 89—1969

Description of a completely automatic speaker-verification system. James E. Luck. **46**: 90—1969

Experimental conversational computer system. Richard B. Neely. **46**: 89—1969

Real-time digital-cepstrum-pitch extraction on a 12-bit machine. Joseph DeLellis, Richard L. Freudberg, Calvin R. Howard, Harold J. Manley, and Harry Shaffer. **46**: 81—1969

Segment-synchronization problem in speech recognition. D. Raj Reddy. **46**: 89—1969

Speaker authentication using a formant-tracking vocoder. J. R. Richards. **46**: 90—1969

Speech communication workshop: discussion on automatic speech recognition. **46**: 91—1969

Use of syntax in the analysis of connected speech utterances. P. J. Vicens. **46**: 89—1969

10 **ULTRASONICS**

10.1 **General, Unclassified**

Letters to the Editor

Ultrasonic Doppler monitoring of vocal-fold velocity and displacement. J. L. Beach and C. A. Kelsey. **46**: 1045—1969

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Ultrasonics Applications Symposium. **46**: 869—1969

10.2 **Physical Effects of Ultrasonic Waves. Optical Diffraction. Ultrasonic Processing**

Papers

Acoustic-radiation force on a solid elastic sphere. Takahi Hasegawa and Katuya Yosioka. **46**: 1139—1969

Generation of subharmonics of order one-half by bubbles in a sound field. Anthony Eller and H. G. Flynn. **46**: 722—1969

High-speed photographic studies of ultrasonically induced cavitation. Hilding G. Olson and Frederick G. Hammitt. **46**: 1272—1969

Reconstruction of objects from their sound-diffraction patterns. M. M. Sondhi. **46**: 1158—1969

Standing-wave-ratio determination of an ultrasonic wave by a holographic method. A. Alippi and L. Palmieri. **46**: 1121—1969

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Light scattering from thermal fluctuations of a liquid–liquid interface. Robert H. Katyl and Uno Ingard. **46**: 79—1969

Periodic small-scale cavitation process. E. A. Neppiras and E. E. Fill. **46**: 93—1969

Ultrasonic examination of proton-transfer reactions in amino acid solutions. Matthew Hussey and Peter D. Edmunds. **46**: 79—1969

Ultrasonic modulation of gamma rays. S. W. Marshall and D. P. Diederich. **46**: 79—1969

Patents

Electrostrictive effect in a transducer for drawing wire, rod or tube. Ralph W. Goble. **46**: 333—1969

Fastener for holding flexible sheet material and method for retaining such material. R. C. Horton. **46**: 1429—1969

Method and apparatus for bonding together a plurality of insulated electrical conductors by sonic energy. Edward G. Obeda. **46**: 334—1969

Method and apparatus for evaluating the property of a liquid by acoustic means. Robert V. Harris. **46**: 333—1969

Method and apparatus for gravity flow casting utilizing sonic energization. Albert G. Bodine, Jr. **46**: 880—1969

Method and apparatus for joining a closure to a container by high frequency radial vibrations. Lewis Balamuth. **46**: 564—1969

Method and apparatus for texturizing synthetic thermoplastic yarns. Robert F. McNab. **46**: 879—1969

Method for degassing metallic melts by sonic vibrations. Alfred Adamec. **46**: 333—1969

Method of making artificial eyelashes using ultrasonic means. Benjamin B. Osher. **46**: 880—1969

Method of simultaneously securing a plurality of elements to a thermoplastic member using sonic energy. Robert Soloff, Stanley E. Jacke, and Peter K. Bloch. **46:** 334—1969
Method of ultrasonically welding plastic index characters to a plastic clock dial plate. J. Nydegger. **46:** 1117—1969
Methods of an apparatus for testing molten metal. R. S. Young and David E. Pitcher. **46:** 879—1969
Osmometer employing ultrasonic radiation. James A. Patterson. **46:** 879—1969
Plastic sealing apparatus using combined heat and ultrasonic energy. F. S. Tyrrell. **46:** 1429—1969
Production line soldering with application of ultrasonic energy directing to molten solder. K. Roczey-Koller. **46:** 1428—1969
Sonic generator. R. S. Soloff. **46:** 1117—1969
Sound generator. R. S. Hutton. **46:** 1117—1969
System for the sonic treatment of emulsions and for resolving the same into their constituent parts. Russell D. May. **46:** 564—1969
Ultrasonic cleaning device. E. J. Fierle and W. R. Melville. **46:** 880—1969
Ultrasonic egg cleaning. Lewis Adam and Stanley S. Lanes. **46:** 879—1969
Ultrasonic extrusion apparatus. James B. Jones. **46:** 564—1969
Ultrasonic hinge-sinking apparatus. Charles P. Miller. **46:** 74—1969
Ultrasonic inspection apparatus. L. Makous. **46:** 879—1969
Ultrasonic lapping machines. L. Balamuth and A. Kuris. **46:** 1117—1969
Ultrasonic machining. A. Giegerich and R. Sievers. **46:** 1116—1969
Ultrasonic metal foil splicer. Peter Arnold. **46:** 74—1969
Ultrasonic testing apparatus for material in sheet or foil. Jacques Dory. **46:** 74—1969
Ultrasonic treating method and apparatus. Jaroslav Kouril. **46:** 333—1969
Ultrasonic welding device. John M. Cole. **46:** 333—1969
Ultrasonic welding method and apparatus. H. P. C. Daniels and F. M. A. Rademakers. **46:** 1429—1969
Uniting parts by the use of vibrational and positive material deforming forces and article made thereby. Stanley J. Sarnoff. **46:** 334—1969

News

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10.3 Ultrasonic Instruments. (See also 5.18.)

Papers

High-frequency acoustical interferometer. J. S. Imai and I. Rudnick. **46:** 1144—1969
Ultrasonic observations of coarticulation in the pharynx. C. A. Kelsey, R. J. Woodhouse, and F. D. Minifie. **46:** 1016—1969

Technical Notes and Research Briefs

Acoustic detection of telephone cable breaks. **46:** 865—1969
Acoustic thermometry. **46:** 316—1969
Ultrasonic microscopy. **46:** 864—1969

Abstracts

Method for measuring phase shifts at ultrasonic frequencies. H. J. McSkimin. **46:** 79—1969

Patents

Acoustic flatness measurement device. Henry G. Tobin, Jr., and James N. Van Scoyoc. **46:** 334—1969
Acoustic flow meter. R. A. Lester and J. H. Thompson. **46:** 1118—1969
Acoustic flow meter for measuring very slow fluid flow. R. A. Lester and J. H. Thompson. **46:** 880—1969
Acoustic pipeline leak detector. Hendrik Bosselaar. **46:** 881—1969
Anvil construction for ultrasonic sealing device. H. S. Dankert and J. H. Geverink. **46:** 881—1969
Apparatus for acoustically detecting minute particles suspended in a gaseous atmosphere. Gerhard Langer. **46:** 335—1969
Coupling member for ultrasonic scanning device. Gilbert Cavalier. **46:** 334—1969
Eddy sonic inspection method. R. J. Botsco. **46:** 1430—1969
Flaw detection recording. J. R. Maklary. **46:** 1118—1969
Grinding apparatus and the like with ultrasonic control means. R. F. Lonaberger. **46:** 1117—1969
High-frequency ultrasonic generators. Thomas J. Scarpa. **46:** 335—1969
Holographic method and apparatus for acoustical field recording. Karl A. Stetson and Herbert A. Elion. **46:** 335—1969
Inspection apparatus and method. Ralph W. Goble. **46:** 565—1969
Method and apparatus for detecting flaws in materials. J. Krautkramer. **46:** 1429—1969
Method and apparatus for generating and receiving ultrasonic helical waves. Ben Wade Oakes Dickinson III. **46:** 564—1969
Method and apparatus for resonating small piezoelectric crystals at low frequencies. E. G. Cook. **46:** 74—1969
Method for maintaining a vibratory tool at a controlled temperature. Lewis Balamuth and Clifford A. Robertson. **46:** 565—1969
Microwave ultrasonic apparatus. M. L. Levinson. **46:** 1118—1969
Multi-scan ultrasonic testing apparatus. John J. Flaherty and Peter J. Rosauer. **46:** 565—1969
Solid acoustic horn with suction means. R. S. Soloff. **46:** 1430—1969
Sonic analyzer. Gerald Vandenbussche. **46:** 335—1969
Ultrasonic coupling defice. I. L. Joy. **46:** 1118—1969
Ultra-sonic flaw detection. Alexander Bryce Calder Rankin. **46:** 880—1969
Ultrasonic flowmeter. A. M. Gillen. **46:** 1118—1969
Ultrasonic flowmeter. G. N. Howatt. **46:** 1118—1969
Ultrasonic flowmeter. H. E. Kallmann. **46:** 1117—1969
Ultrasonic flowmeter. W. Welkowitz. **46:** 1117—1969
Ultrasonic frequency power supply. P. M. Uthe, L. G. Wright, and R. E. Greenan. **46:** 881—1969
Ultrasonic inspection apparatus. R. F. Hanstock, N. F. Godwin, R. F. Lumb, and M. A. Williams. **46:** 1117—1969
Ultrasonic inspection apparatus. L. N. Wood. **46:** 1430—1969
Ultrasonic inspection probe. Louis Beaujard and Jacques Mondot. **46:** 564—1969

Ultrasonic pipe testing method and apparatus. Noel B. Proctor. **46:** 565—1969
Ultrasonic presence detectors. L. de Tullio, I. L. Spence, and R. Mostyn. **46:** 1429—1969
Ultrasonic presence detectors. I. L. Spence. **46:** 1429—1969
Ultrasonic search wheel assembly. Gerald de G. Cowan. **46:** 881—1969
Welding apparatus provided with a vibrating contact tip. Cornelis Martinus Van Der Burgt. **46:** 336—1969
Wire bonding method. Matheus D. Pennings. **46:** 881—1969

10.4 **Gases, Ultrasonic Velocity, Dispersion, Absorption. (See also 11.3.)**

Papers

Evolution of an initial disturbance in a gas mixture. Edward B. Goldman. **46:** 1132—1969
Rôle of the vibrational relaxation of nitrogen in the absorption of sound in air. J. E. Piercy. **46:** 602—1969
Sound velocity and absorption in low-pressure gases confined to tubes of circular cross section. F. Douglas Shields and Jerry Faughn. **46:** 158—1969
Thermal relaxation in humid air. Robin G. Monk. **46:** 580—1969
Ultrasonic dispersion and absorption in freon 113. F. J. Eberhardt. **46:** 1128—1969

Letters to the Editor

Thermal relaxation in nitrogen with CH_4 and CD_4 admixtures. M. C. Henderson, L. J. Burbank, and J. J. Glatzel. **46:** 819—1969

Abstracts

Sound velocity and absorption in low-pressure gases confined to tubes of circular cross section. F. Douglas Shields. **46:** 86—1969
Ultrasonic propagation in high-temperature gases. S. Uva, E. H. Carnevale, and C. Carey. **46:** 86—1969

10.5 **Liquids, Ultrasonic Velocity, Dispersion, Absorption. (See also 13.2 and 13.3.)**

Papers

Effect of pressure on ultrasonic absorption, multistate dissociation, and chemical equilibrium in $MnSO_4$ solutions. F. H. Fisher and W. M. Wright. **46:** 574—1969
Subharmonic and other low-frequency emission from bubbles in sound-irradiated liquids. E. A. Neppiras. **46:** 587—1969
Ultrasonic and viscoelastic relaxation in Bis [*m*-(*m*-phenoxy phenoxy) phenyl] ether. A. J. Barlow, J. Lamb, and N. S. Taşköprülü. **46:** 569—1969
Ultrasonic radiation field of a focusing spherical source at finite amplitudes. Carl W. Smith and Robert T. Beyer. **46:** 806—1969

Letters to the Editor

Concentration and temperature dependence of the molecular sound velocity and compressibility in aqueous mixtures of glycerol at 0.6 Mc/sec. S. Rajagopalan. **46:** 820—1969
Interferometric measurement of ultrasonic velocity in liquids—effect of diffraction. S. V. Subrahmanyam, V. Hyder Khan, and C. V. Raghavan. **46:** 272—1969

Abstracts

Light scattering from thermal fluctuations of a liquid–liquid interface. Robert H. Katyl and Uno Ingard. **46:** 79—1969
Method for measuring phase shifts at ultrasonic frequencies. H. J. McSkimin. **46:** 79—1969
Spectral analysis of cavitation noise in cryogenic liquids. A. Mosse and R. D. Finch. **46:** 93—1969
Ultrasonic examination of proton-transfer reactions in amino acid solutions. Matthew Hussey and Peter D. Edmonds. **46:** 79—1969
Ultrasonic relaxation in molecules containing a six-membered ring. K. C. Reddy and J. E. Piercy. **46:** 79—1969

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Instrument for measuring cavitation intensity in a liquid. Norman G. Branson. **46:** 882—1969

10.6 **Solids, Ultrasonic Velocity, Dispersion, Absorption**

Papers

Excitation and detection of surface elastic waves in piezoelectric crystals. S. G. Joshi and R. M. White. **46:** 17—1969

Letters to the Editor

Reflection of ultrasonic third-harmonic waves in NaCl. C. R. Scorey. **46:** 820—1969

Abstracts

Critical-point ultrasonic attenuation and velocity behavior. R. G. Leisure and R. W. Moss. **46:** 105—1969
First branch dispersion of torsional waves in bimaterial rods. Robert C. Reuter, Jr. **46:** 86—1969
Method for measuring phase shifts at ultrasonic frequencies. H. J. McSkimin. **46:** 79—1969
Surface wave propagation on piezoelectric materials. M. R. Daniel. **46:** 104—1969
Surface waves on magnetic materials. H. Matthews. **46:** 104—1969
Temperature dependence of the electroacoustical constants of Li-doped ZnO single crystals. R. T. Smith and V. E. Stubblefield. **46:** 105—1969
Theoretical and experimental study of modes of vibration in contoured, *AT*-cut quartz resonator plates. P. C. Y. Lee and G. T. Pearman. **46:** 104—1969

10.10 **Ultrasonic Relaxation Processes in Solids, Liquids, and Gases**

Papers

Rôle of the vibrational relaxation of nitrogen in the absorption of sound in air. J. E. Piercy. **46:** 602—1969
Thermal relaxation in humid air. Robin G. Monk. **46:** 580—1969
Ultrasonic and viscoelastic relaxation in Bis [*m*-(*m*-phenoxy phenoxy) phenyl] ether. A. J. Barlow, J. Lamb, and N. Ş. Taşköprülü. **46:** 569—1969

Letters to the Editor

Thermal relaxation in nitrogen with CH_4 and CD_4 admixtures. M. C. Henderson, L. J. Burbank, and J. J. Glatzel. **46:** 819—1969

Abstracts

Ultrasonic propagation in high-temperature gases. S. Uva, E. H. Carnevale, and C. Carey. **46:** 86—1969

Ultrasonic relaxation in molecules containing a six-membered ring. K. C. Reddy and J. E. Piercy. **46:** 79—1969

11 RADIATION AND SCATTERING

11.2 Reflection, Refraction, Diffraction, and Interference of Sound Waves

Papers

Analysis of acoustic wave scattering from a rough layer. Kumar Krisen and W. W. Koepsel. **46:** 617—1969

Asymmetries in cylindrical waveguides. G. Z. Forristall and J. D. Ingram. **46:** 164—1969

Azimuthal dependence of sound backscattered from the sea surface. Jon Reeves, Yoshiya Igarashi, Lloyd Beck, and R. Stern. **46:** 1284—1969

Effect of a shear layer on plane waves of sound in a fluid. E. W. Graham and B. B. Graham. **46:** 169—1969

Effect of frequency and space averaging on the transmission responses of multimode media. M. R. Schroeder. **46:** 277—1969

Experimental verification of the proper Kirchhoff theory of wave scattering from known randomly rough surfaces. A. K. Fung and A. Leovaris. **46:** 1057—1969

Four-pole properties of an electroacoustic delay line with plane-concave transducers. L. J. van der Pauw. **46:** 508—1969

Influence of diffraction on the four-pole impedances of electroacoustic delay lines with circular or rectangular plane-parallel transducers. L. J. van der Pauw. **46:** 497—1969

Intensity fluctuations in reflections from the ocean surface. M. Vertner Brown. **46:** 196—1969

Reconstruction of objects from their sound-diffraction patterns. M. M. Sondhi. **46:** 1158—1969

Relationships between acoustic backscatter and geological characteristics of the deep ocean floor. R. B. Patterson. **46:** 756—1969

Scattering by liquid-coated prolate spheroids. C. Yeh. **46:** 797—1969

Surface-impedance nonuniformities as wave-vector convertors. G. Maidanik. **46:** 1062—1969

Time-domain analysis of broad-band refraction and diffraction. H. A. Wright, Jr. **46:** 661—1969

Transmission of plane waves through layered linear viscoelastic media. R. P. Shaw and P. Bugl. **46:** 649—1969

Letters to the Editor

Comments on two letters by Neubauer on creeping and circumferential waves [J. Acoust. Soc. Amer. **44,** 298(L) (1968); 1150(L) (1968)] R. E. Bunney. **46:** 275—1969

Diffraction of a plane acoustic pulse by a free orthogonal trihedron (three-dimensional corner). Richard P. Shaw and Daniel F. Courtine. **46:** 1382—1969

Reply to "Comments on two letters by Neubauer on creeping and circumferential waves" [J. Acoust. Soc. Amer. **46,** 275(L) (1969)] Werner G. Neubauer. **46:** 275—1969

Spatial averaging in a diffuse sound field. David Lubman. **46:** 532—1969

Spatial averaging in a diffuse sound field and the equivalent number of independent measurements. M. R. Schroeder. **46:** 534—1969

Abstracts

Acoustic properties of wood. Yoshimasa Sakurai and Eugen J. Skudrzyk. **46:** 124—1969

Integral equations for exterior scattering that have a unique solution at all frequencies. K. M. Mitzner. **46:** 117—1969

Reconstruction of shapes of objects from their sound-diffraction patterns. M. M. Sondhi. **46:** 116—1969

11.3 Velocity and Attenuation of Sound Waves. (See also 10.4, 10.5, 10.6, 13.2, and 13.3.)

Papers

Acoustic decoupling properties of onionskin paper. R. W. Higgs and L. J. Eriksson. **46:** 211—1969

Decoupling of the vector wave equation of elasticity for radially heterogeneous media. Sarva Jit Singh and Ari Ben-Menahem. **46:** 655—1969

Dispersion of flexural waves in circular bimaterial cylinders—theoretical treatment. Robert C. Reuter, Jr. **46:** 643—1969

Effective dynamic properties of a fiber-reinforced material and the propagation of sinusoidal waves. Chi-Hung Mok. **46:** 631—1969

Evolution of an initial disturbance in a gas mixture. Edward B. Goldman. **46:** 1132—1969

Propagation of sinusoidal small-amplitude waves in a deformed viscoelastic solid. I. M. A. Hayes and R. S. Rivlin. **46:** 610—1969

Rôle of the vibrational relaxation of nitrogen in the absorption of sound in air. J. E. Piercy. **46:** 602—1969

Sound-wave attenuation through air contained in small tubes. Kenneth F. Neusen and I. Carl Romer, Jr. **46:** 1148—1969

Transmission of plane waves through layered linear viscoelastic media. R. P. Shaw and P. Bugl. **46:** 649—1969

Ultrasonic dispersion and absorption in freon 113. F. J. Eberhardt. **46:** 1128—1969

Wave propagation in anisotropic bars of rectangular cross section. II. Flexural wave propagation. Nicholas J. Nigro and Richard Andrews. **46:** 639—1969

Letters to the Editor

First-branch dispersion of torsional waves in bimaterial rods. Robert C. Reuter, Jr. **46:** 821—1969

Interferometric measurement of ultrasonic velocity in liquids—effect of diffraction. S. V. Subrahmanyam, V. Hyder Khan, and C. V. Raghavan. **46:** 272—1969

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Outdoor acoustical treatment: grass and trees. William Siekman. **46:** 863—1969

Abstracts

"Free-field" tube for perturbed propagation measurements. Thomas D. Sachs. **46:** 86—1969

Review of the molecular absorption anomally. Louis C. Sutherland. **46:** 86—1969
Sound velocity and absorption in low-pressure gases confined to tubes of circular cross section. F. Douglas Shields. **46:** 86—1969

11.4 Waves in Bounded Media

Papers

Acoustic-radiation force on a solid elastic sphere. Takahi Hasegawa and Katuya Yosioka. **46:** 1139—1969
Effect of frequency and space averaging on the transmission responses of multimode media. M. R. Schroeder. **46:** 227—1969
Infrasonic resonances in natural underground cavities. William T. Plummer. **46:** 1074—1969
Intensity summation of modes and images in shallow-water sound transmission. R. J. Urick. **46:** 780—1969
Pressure waves in an accelerated sphere filled with a compressible liquid. F. Edward Ehlers. **46:** 605—1969
Stability of nonlinear oscillations of stretched strings. G. V. Anand. **46:** 667—1969

Abstracts

Acoustic properties of wood. Yoshimasa Sakurai and Eugen J. Skudrzyk. **46:** 124—1969
Dynamic stresses and strains in a buoy cable system subjected to longitudinal excitation using a continuum approach. P. A. Laura and Jacques Goeller. **46:** 109—1969
First branch dispersion of torsional waves in bimaterial rods. Robert C. Reuter, Jr. **46:** 86—1969
Surface wave propagation on piezoelectric materials. M. R. Daniel. **46:** 104—1969
Surface waves on magnetic materials. H. Matthews. **46:** 104—1969
Vibration transmission in a ribbed cylindrical shell. Jerome E. Manning. **46:** 107—1969

11.5 Radiation from Vibrating Objects in Air and Other Gases. Acoustic Impedance. Source of Sound. (See also 5.3, 12.3z, and 13.7.)

Papers

Acoustic field produced by an arbitrary body in good vibration. I. Theory and three-dimensional synthesis. E. Y. T. Kuo. **46:** 623—1969
New method of evaluating mutual coupling of sources on nonsimple bodies. V. Mangulis. **46:** 753—1969

Letters to the Editor

Sound radiation from the mouth of an organ pipe. John W. Coltman. **46:** 477—1969

Abstracts

Integral equations for exterior scattering that have a unique solution at all frequencies. K. M. Mitzner. **46:** 117—1969
Sound from turbulent-boundary-layer-excited panels. Huw G. Davies. **46:** 117—1969

11.6 Wave Propagation in Tubes

Papers

Asymmetries in cylindrical waveguides. G. Z. Forristall and J. D. Ingram. **46:** 164—1969
Sound velocity and absorption in low-pressure gases confined to tubes of circular cross section. F. Douglas Shields and Jerry Faughn. **46:** 158—1969
Sound-wave attenuation through air contained in small tubes. Kenneth F. Neusen and I. Carl Romer, Jr. **46:** 1148—1969

Abstracts

"Free-field" tube for perturbed propagation measurements. Thomas D. Sachs. **46:** 86—1969
Profile of weak shock waves in a shock tube. John H. Magerlein and Wayne M. Wright. **46:** 94—1969
Sound velocity and absorption in low-pressure gases confined to tubes of circular cross section. F. Douglas Shields. **46:** 86—1969

11.7 Mathematical Theory of Wave Propagation. Ray Acoustics. (See also 11.1.5.)

Papers

Acoustic field produced by an arbitrary body in good vibration. I. Theory and three-dimensional synthesis. E. Y. T. Kuo. **46:** 623—1969
Acoustic-radiation force on a solid elastic sphere. Takahi Hasegawa and Katuya Yosioka. **46:** 1139—1969
Acoustic rays in two-dimensional rotating flows. Richard F. Salant. **46:** 1153—1969
Analysis of acoustic wave scattering from a rough layer. Kumar Krishen and W. W. Koepsel. **46:** 617—1969
Asymmetries in cylindrical waveguides. G. Z. Forristall and J. D. Ingram. **46:** 164—1969
Decoupling of the vector wave equation of elasticity for radially heterogeneous media. Sarva Jit Singh and Ari Ben-Menahem. **46:** 655—1969
Dispersion of flexural waves in circular bimaterial cylinders—theoretical treatment. Robert C. Reuter, Jr. **46:** 643—1969
Effect of a shear layer on plane waves of sound in a fluid. E. W. Graham and B. B. Graham. **46:** 169—1969
Effective dynamic properties of a fiber-reinforced material and the propagation of sinusoidal waves. Chi-Hung Mok. **46:** 631—1969
Evolution of an initial disturbance in a gas mixture. Edward B. Goldman. **46:** 1132—1969
Experimental verification of the proper Kirchhoff theory of wave scattering from known randomly rough surfaces. A. K. Fung and A. Leovaris. **46:** 1057—1969
Green's functions for unbounded constant gradient media. D. H. Wood. **46:** 1333—1969
Normal compression and radial shear waves scattering at a penny-shaped crack in an elastic solid. G. C. Sih and J. F. Leober. **46:** 711—1969
Pressure waves in an accelerated sphere filled with a compressible liquid. F. Edward Ehlers. **46:** 605—1969
Propagation of sinusoidal small-amplitude waves in a deformed viscoelastic solid. I. M. A. Hayes and R. S. Rivlin. **46:** 610—1969
Ray and wave invariants for SOFAR channel propagation. D. Michael Milder. **46:** 1259—1969
Spherical model of an acoustical wave generated by rapid laser heating in a liquid. Chia-Lun Hu. **46:** 728—1969
Stress waves in a laminated medium generated by transverse forces. L. E. Voelker and J. D. Achenbach. **46:** 1213—1969

Surface-impedance nonuniformities as wave-vector convertors. G. Maidanik. **46**: 1062—1969
Time autocorrelation of sonic pulses propagated in a random medium. S. J. Campanella and A. G. Favret. **46**: 1234—1969
Time-domain analysis of broad-band refraction and diffraction. H. A. Wright, Jr. **46**: 661—1969
Transmission of acoustic waves through submerged viscoelastic spherical shells. George Workman and Sabih I. Hayek. **46**: 1340—1969
Transmission of plane waves through layered linear viscoelastic media. R. P. Shaw and P. Bugl. **46**: 649—1969
Velocity profiles that produce acoustic focal points on an axis of minimum velocity. DeWayne White. **46**: 1318—1969
Volume scattering-strength profiles in the Northeast Pacific Ocean. J. A. Scrimger and R. G. Turner. **46**: 771—1969
Wave propagation in anisotropic bars of rectangular cross section. II. Flexural wave propagation. Nicholas J. Nigro and Richard Andrews. **46**: 639—1969

Letters to the Editor

First-branch dispersion of torsional waves in bimaterial rods. Robert C. Reuter, Jr. **46**: 821—1969
Propagation of shear-stress waves in an infinite nonhomogeneous elastic medium with cylindrical cavity. Damoder P. Reddy and Melvin G. Marietta. **46**: 1381—1969
Thickness-twist vibrations of a piezoelectric plate. Morio Onoe. **46**: 1087—1969

Abstracts

Applications of variational principles in acoustics. G. M. Rentzepis. **46**: 79—1969
Ray progress in a stochastic layered medium. Norman W. Lord. **46**: 111—1969
Theoretical and experimental study of modes of vibration in contoured, *AT*-cut quartz resonator plates. P. C. Y. Lee and G. T. Pearman. **46**: 104—1969

11.8 Physical Effects of Sound. (See also 12.11.)

Papers

Acoustic-radiation force on a solid elastic sphere. Takahi Hasegawa and Katuya Yosioka. **46**: 1139—1969
Generation of subharmonics of order one-half by bubbles in a sound field. Anthony Eller and H. G. Flynn. **46**: 722—1969
Propagation of sinusoidal small-amplitude waves in a deformed viscoelastic solid. I. M. A. Hayes and R. S. Rivlin. **46**: 610—1969

Abstracts

Comparative analysis of acoustic testing techniques. William J. Gruner and Lester D. Saint. **46**: 107—1969
Effect of a transverse resonant acoustic field upon viscous fluid in a cylindrical enclosure. A. E. Hribar and K. R. Purdy. **46**: 100—1969
Periodic small-scale cavitation process. E. A. Neppiras and E. E. Fill. **46**: 93—1969
Triggering of hydrodynamic instabilities by acoustic pulses. Allan B. Friedland and Allan D. Pierce. **46**: 94—1969

11.9 Sounds in the Atmosphere

Papers

Atmospheric correction factor for sonic-boom pressure amplitudes. Allan D. Pierce and Charles L. Thomas. **46**: 1366—1969
Infrasonic resonances in natural underground cavities. William T. Plummer. **46**: 1074—1969

Abstracts

Review of the molecular absorption anomaly. Louis C. Sutherland. **46**: 86—1969

12 MECHANICAL VIBRATIONS AND SHOCK. (See also 5, 11, and 16.)

12.1 General, Unclassified

Letters to the Editor

Reply to "Comments on 'Natural frequencies and modes of skew membranes'" [P. A. Laura, J. Acoust. Soc. Amer. **45**, 1281 (L) (1969)] Somayajulu Durvasula. **46**: 1404—1969

Abstracts

History of international standardization in mechanical vibration and shock. D. Muster. **46**: 83—1969

Book Reviews

Mechanical Behavior of Materials Under Dynamic Loads. Ulic S. Lindholm, Ed. (Reviewed by Warren P. Mason.) **46**: 327—1969
Theory and Practice of Cushion Design. Gordon S. Mustin. (Reviewed by E. A. Ripperger.) **46**: 1417—1969
Vibration and Shock in Damped Mechanical Systems. John C. Snowdon. (Reviewed by Robert Plunkett.) **46**: 328—1969

News

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Shock-Tube Symposium. **46**: 324—1969
Symposium on Stochastic Processes Applied to Dynamics Problems. **46**: 868—1969

12.3 Instruments and Apparatus Relating to Vibration and Shock. (See also 5.3, 5.4, 5.9, and 5.21.)

Papers

Free vibrations of ring- and stringer-stiffened conical shells. O. E. Crenwelge, Jr., and D. Muster. **46**: 176—1969
Resonance-bar damping measurements by the resonance-buildup technique. N. F. Fiore and R. M. Brach. **46**: 492—1969
Vibration characteristics of a submerged ring-stiffened cylindrical shell of finite length. P. R. Paslay, R. B. Tatge, R. J. Wernick, E. K. Walsh, and D. F. Muster. **46**: 701—1969

Letters to the Editor

Damping-material effectiveness measured by the Geiger-plate and composite-beam tests. T. J. Dudek. **46**: 1384—1969

Displacement-transducer assembly used in studying the parallel-flow-induced vibration of reactor fuel rods. J. A. Jendrzejczyk and M. W. Wambganss, Jr. **46**: 826—1969

Technical Notes and Research Briefs

Dynamic wire measurements by new inspection techniques. L. S. Watkins and V. J. Zaleckas. **46**: 314—1969

Abstracts

Development of a multimodal vibration test fixture for spacecraft assemblies. Terry D. Scharton, Thomas M. Yang, Mark C. Trummel, and Momtaz N. Mansour. **46**: 108—1969

Measurement of the phase of vibrational displacement by a laser interferometer. M. R. Serbyn and F. A. Andrews. **46**: 93—1969

System for the complex plane representation of mechanical vibration response parameters. David S. Pallett. **46**: 108—1969

12.3i Vibration Isolators, Attenuators, and Dampers. (See also 2.11 and 5.21.)

Papers

Reduction of the longitudinal vibration of internally damped rods having finite termination impedance. J. C. Snowdon. **46**: 1203—1969

Letters to the Editor

Damping-material effectiveness measured by the Geiger-plate and composite-beam tests. T. J. Dudek. **46**: 1384—1969

Abstracts

Optimum configuration for damping by constrained viscoelastic layers. R. Plunkett and C. T. Lee. **46**: 76—1969

Vibration-isolation treatment of a railroad track bed. Laymon N. Miller. **46**: 99—1969

12.3p Vibration Pickups and Indicators. Calibration Equipment and Techniques. (See also 5.9, 5.18, and 13.11t.)

Letters to the Editor

Displacement-transducer assembly used in studying the parallel-flow-induced vibration of reactor fuel rods. J. A. Jendrzejczyk and M. W. Wambsganss, Jr. **46**: 826—1969

Patents

Electro-mechanical transducer. John Hayer, Jr., and Eric J. Straus. **46**: 566—1969

Force transducer. Weightstill W. Woods. **46**: 566—1969

Miniature mechanical impedance head. Fred Schloss. **46**: 566—1969

Quartz accelerometer. John C. Stiles. **46**: 565—1969

Solid state accelerometer. Theodore Boxer, Harold Jackson, William Nelson, William Robinson, and Sorrell Weisman. **46**: 566—1969

Vibration pickup. Thomas C. Warner, Jr., and John E. Judd. **46**: 336—1969

12.3v Vibration Generators. Shake Tables. (See also 5.21.)

Patents

Method and device for mold casting utilizing sonic energization. Albert G. Bodine, Jr. **46**: 882—1969

Sonic process and apparatus for cleaning pipes. Albert G. Bodine. **46**: 882—1969

Sonic vibration generator. Albert G. Bodine, Jr. **46**: 882—1969

12.5 Shock. (See also 14.2 and 13.10.)

Abstracts

Excitation of transient vibrations of idealized ship models by underwater explosions. George Chertock. **46**: 84—1969

Prediction of shock motions of a ship deck. R. D. Short and E. A. Thornton. **46**: 84—1969

Shock-design research—theory or experiment? R. O. Belsheim and M. W. Oleson. **46**: 83—1969

Transmission of pyrotechnic shock in a missile section and its measurement. Paul Wang. **46**: 109—1969

12.7 Theory of Vibrating Systems. (See also 11.7 and 11.1.5.)

Papers

Bubble dynamics in a non-Newtonian fluid subject to periodically varying pressures. K. S. Chan and Wen-Jei Yang. **46**: 205—1969

Constants of a trapped-energy electromechanical transducer made by evaporating a thin layer of a piezoelectric crystal on each side of a quartz plate. W. P. Mason. **46**: 687—1969

Dynamic stress and displacements in a two-material cable system subjected to longitudinal excitation. Jacques E. Goeller and Patricio A. Laura. **46**: 284—1969

Dynamic vibrations and stresses in composite elastic plates. M. H. Cobble. **46**: 1175—1969

Free vibrations of circular membranes under arbitrary tension by the finite-element method. Chuh Mei. **46**: 693—1969

Free vibrations of ring-and stringer-stiffened conical shells. O. E. Crenwelge, Jr., and D. Muster. **46**: 176—1969

Normal compression and radial shear waves scattering at a penny-shaped crack in an elastic solid. G. C. Sih and J. F. Loeber. **46**: 711—1969

Reduction of the longitudinal vibration of internally damped rods having finite termination impedance. J. C. Snowdon. **46**: 1203—1969

Response of linear structures to classes of pressure fields. I. Deterministic noncovecting fields. M. G. Cottis and P. Collas. **46**: 678—1969

Stability of nonlinear oscillations of stretched strings. G. V. Anand. **46**: 667—1969

Stress waves in a laminated medium generated by transverse forces. L. E. Voelker and J. D. Achenbach. **46**: 1213—1969

Turbulence-induced plate vibrations: and evaluation of finite- and infinite-plate models. Wayne A. Strawderman. **46**: 1294—1969

Upper and lower bounds for frequencies of elastic arcs. Tish-Chun Chang and Enrico Volterra. **46**: 1165—1969

Upper and lower bounds on the Nth eigenvalue of vibrating anisotropic solids. Paul Hertelendy. **46**: 1186—1969

Vibration characteristics of a submerged ring-stiffened cylindrical shell of finite length. P. R. Paslay, R. B. Tatge, R. J. Wernick, E. K. Walsh, and D. F. Muster. **46**: 701—1969

Vibration in an infinite isotropic elastic plate due to a vertical harmonic load. H. S. Paul and N. Muthiyalu. **46:** 191—1969
Vibrations of contoured and partially plated, contoured, rectangular, *AT*-cut quartz plates. P. C. Y. Lee and Shoei-Sheng Chen. **46:** 1193—1969
Vibrations of fluid-filled spherical shells. Ali E. Engin. **46:** 186—1969

Letters to the Editor

Application of the fast Fourier transform to linear, distributed system response calculations. Pritchard H. White. **46:** 273—1969
Author's closure on "Normal modes and natural frequencies of combined structures" [W. L. Fourney and G. J. O'Hara, J. Acoust. Soc. Amer. **44,** 1220–1224 (1968)] W. L. Fourney and G. J. O'Hara. **46:** 824—1969
Comment on "normal modes and natural frequencies of combined structures" [W. L. Fourney and G. J. O'Hara, J. Acoust. Soc. Amer. **44,** 1220–224 (1968)] J. L. Bogdanoff. **46:** 824—1969
Comments on "finite radial oscillations of a spinning thick-walled cylinder" [J. L. Nowinski and S. D. Wang, J. Acoust. Soc. Amer. **40,** 1548–1553 (1966)] S. Bharatha. **46:** 823—1969
Comments on "Frequencies of a hanging chain" [T. Huang and D. W. Dareing, J. Acoust. Soc. Amer. **45,** 1046–1049 (1969)] Patricio A. Laura. **46:** 1087—1969
On the free vibration modes of an infinite thermoelastic plate having isothermal surfaces. D. F. Mowbray and G. L. Anderson. **46:** 1387—1969
Propagation of shear-stress waves in an infinite nonhomogeneous elastic medium with cylindrical cavity. Damoder P. Reddy and Melvin G. Marietta. **46:** 1381—1969
Reply to "Comments on 'Finite radial oscillations of a spinning thick-walled cylinder'" [S. Bharatha, J. Acoust. Soc. Amer. **46,** 823(L) (1969)] J. L. Nowinski and S. D. Wang. **46:** 823—1969
Reply to "Comments on 'Frequencies of a hanging chain'" [P. A. Laura, J. Acoust. Soc. Amer. **46,** 1087 (1969)] **46:** 1087—1969
Thickness-twist vibrations of a piezoelectric plate. Morio Onoe. **46:** 1087—1969
Vibration of inhomogeneous circular membranes. Joseph A. Fromme. **46:** 824—1969

Abstracts

Dynamic shell theory for ferroelectric ceramics. Douglas S. Drumheller and Arturs Kalnins. **46:** 108—1969
Dynamic stresses and strains in a buoy cable system subjected to longitudinal excitation using a continuum approach. P. A. Laura and Jacques Goeller. **46:** 109—1969
Generation of subharmonic frequency pairs in nonlinear systems. Anthony Eller. **46:** 94—1969
Mathematical aspects of problems encountered in calculating the response of structures excited by moving loads. O. H. Criner and J. H. Fleischhaker. **46:** 108—1969
Optimum configuration for damping by constrained viscoelastic layers. R. Plunkett and C. T. Lee. **46:** 76—1969
Resonant frequency of a fluid loaded circular plate vibrating in the second symmetrical mode. S. Gardner and O. Lindemann. **46:** 108—1969
Subharmonics, resonant systems, and parametric oscillations. Laszlo Adler. **46:** 94—1969
Vibration transmission in a ribbed cylindrical shell. Jerome E. Manning. **46:** 107—1969

12.10 Seismology. Geophysical Prospecting. Seismographs

Patents

Acoustical logging apparatus. Dan G. Sherry. **46:** 74—1969
Acoustic well logging tool. Joseph Zemanek, Jr. **46:** 337—1969
Air feed device for valve retract system in pneumatic accustic source. Malcolm O. Johnson. **46:** 567—1969
Common depth point seismic prospecting. Walter H. Glazier. **46:** 75—1969
Control of energy spectrum in marine seismic exploration. Fred A. Brock and Roy C. Johnston. **46:** 567—1969
Device for seismic prospecting. Mikhail Ivanovich Balashkand et al. **46:** 882—1969
Device to avoid the pulsation of the gas bubbles generated by underwater explosions. Jacques Cholet, Jean Pierre Fail, Gerard Grau, and Pierre Magneville. **46:** 1118—1969
Digital system for controlling a seismic vibrator. Graydon L. Brown and Bobby J. Thomas. **46:** 1430—1969
Fluid-sonic pile driving. Kenneth A. Blenkarn and Arthur Lubinski. **46:** 566—1969
Fuel mixing and ignition system in pneumatic acoustic source. George B. Loper. **46:** 567—1969
Hydroacoustic apparatus. John V. Bouyoucos. **46:** 336—1969
Hydrophone cable. Fred E. Stapleton and James E. Buescher. **46:** 567—1969
Method and apparatus for logging inclined earth boreholes. Arthur H. Youmans. **46:** 567—1969
Method for determining travel time of a signal in continuous-wave seismic prospecting. Lloyd M. Hammett. **46:** 1430—1969
Method of and apparatus for detecting faults in subsurface strata. Eberhard Borges. **46:** 337—1969
Method of an apparatus for imparting a seismic pulse to earth. Rodger W. Dart and Richard E. Smythe. **46:** 567—1969
Methods and apparatus for attenuating the effects of multiple seismic reflections. Nigel Allister Anstey. **46:** 74—1969
Optical deconvolution of seismic records. John B. Farr, Harold M. Lang, and Moses G. Widess. **46:** 74—1969
Optical diffraction system for analyzing and processing seismic data. John E. Hogg, Ernest K. Shaw, and George W. Smith. **46:** 566—1969
Process for the production of machine-made waves and apparatus for practicing this process. Pierre Jenner, Léon Sayous, and Rémi Larrieu. **46:** 75—1969
Processing of seismic data. Edgar S. Driver and Maurice E. Taylor. **46:** 336—1969
Seismic exploration method for delineating an area of a seismic wave reflecting earth interface. Whitman D. Mounce, John D. Ball, and Tobias Flatow. **46:** 566—1969
Seismic sensor for earth movement caused by a detonation. Richard C. Weischedel. **46:** 882—1969

Seismic signal transducing apparatus. Booth B. Strange and Ben B. Thigpen. **46:** 75—1969
Seismic survey systems. Kenneth W. McLoad. **46:** 336—1969
Seismic underwater detector system. Kenneth E. Burg. **46:** 1430—1969
Seismic velocity correlation. James Robert Brey. **46:** 337—1969
Submersible detector for sensing underwater sounds. Leo Ongkiehong and Harm Mast. **46:** 75—1969
Three-dimensional display of borehold logs. Richard L. Caldwell. **46:** 337—1969
Transmission circuits for well logging systems. Joseph Zemanek, Jr. **46:** 1430—1969
Well logging systems. Robert J. Schwartz. **46:** 567—1969

News

Geosciences Electronics Symposium. **46:** 869—1969

12.11 Effect of Sound on Structures. Fatigue. (See also 11.8.)

Papers

Response of linear structures to classes of pressure fields. I. Deterministic nonconvecting fields. M. G. Cottis and P. Collas. **46:** 678—1969

Abstracts

Comparative analysis of acoustic testing techniques. William J. Gruner and Lester D. Saint. **46:** 107—1969
Excitation of transient vibrations of idealized ship models by underwater explosions. George Chertock. **46:** 84—1969
Optical investigations of acoustical loads on launch vehicles. L. N. Wilson and F. R. Krause. **46:** 76—1969
Turbulence-induced plate vibrations: a comparison of finite and infinite plate models. Wayne A. Strawderman. **46:** 107—1969

Patents

Apparatus for accomplishing sonic fusion welding and the like involving variable impedance load factors. A. G. Bodine, Jr. **46:** 1118—1969
Sonic method and apparatus for demolition of structures. A. G. Bodine. **46:** 1431—1969

12.12 Effect of Sound on Structures. Fatigue. (See also 11.8.)

Papers

Average power and power exchange in oscillators. Will Gersch. **46:** 1180—1969

Abstracts

Extremal statistics of combined random sinusoids. Richard H. Lyon. **46:** 76—1969
Turbulence-induced plate vibrations: a comparison of finite and infinite plate models. Wayne A. Strawderman. **46:** 107—1969

Errata

Cross correlation in structural systems: dispersive and nondispersive waves [P. H. White, J. Acoust. Soc. Amer. **45,** 1118–1128 (1969)] **46:** 1390—1969

13 UNDERWATER SOUND

13.1 General, Unclassified

Papers

Effect of air bubbles in the external auditory meatus on underwater hearing thresholds. Harry Hollien and John F. Brandt. **46:** 384—1969

Book Reviews

Handbook of Ocean and Underwater Engineering. John J. Myers, Ed. (Reviewed by Vernon M. Albers.) **46:** 327—1969
Principles and Applications of Underwater Sound. Carl Eckart, Ed. (Reviewed by V. M. Albers.) **46:** 546—1969

News

Shock and Vibration Symposium. **46:** 1093—1969

13.2 Propagation of Sound in Water. Attenuation. Fluctuation

Papers

Acoustic rays in two-dimensional rotating flows. Richard F. Salant. **46:** 1153—1969
Green's functions for unbounded constant gradient media. D. H. Wood. **46:** 1333—1969
Intensity fluctuations in reflections from the ocean surface. M. Vertner Brown. **46:** 196—1969
Intensity summation of modes and images in shallow-water sound transmission. R. J. Urick. **46:** 780—1969
Phase and amplitude fluctuations in propagating through a layered ocean. Robert M. Kennedy. **46:** 737—1969
Ray and wave invariants for SOFAR channel propagation. D. Michael Milder. **46:** 1259—1969
Time autocorrelation of sonic pulses propagated in a random medium. S. J. Campanella and A. G. Favret. **46:** 1234—1969
Underwater acoustic propagation prediction by the alternating-direction implicit-explicit computational method. M. C. Smith. **46:** 233—1969
Underwater hearing thresholds in man as a function of water depth. John F. Brandt and Harry Hollien. **46:** 893—1969
Velocity profiles that produce acoustic focal points on an axis of minimum velocity. DeWayne White. **46:** 1318—1969
Vertical coherence of sound transmitted over a twenty-four-mile path. R. J. Urick, T. J. Tulko, and D. D. Abraham. **46:** 1308—1969

Abstracts

Dependence of temporal and spatial correlation of forward-scattered underwater sound on the surface height correlation function. H. Medwin. and C. S. Clay. **46:** 122—1969
Distortion of some "squarish pulses" in a constant gradient medium. D. H. Wood. **46:** 111—1969
Effect of shadowing on acoustic scattering from the sea surface. R. R. Gardner. **46:** 122—1969
Intensity summation of modes and images in shallow water sound transmission. R. J. Urick. **46:** 111—1969
Near-surface ocean bubble distributions measured *in situ* by acoustic techniques. Herman Medwin. **46:** 122—1969
On the effects of stochastic boundary perturbations on acoustic wave propagation. Dimitri S. Bugnolo. **46:** 122—1969

Ray progress in a stochastic layered medium. Norman W. Lord. **46:** 111—1969
Scattering of acoustic waves by a rough, pressure-release surface. C. W. Horton, Sr., and D. R. Melton. **46:** 122—1969
Volume scattering of acoustic waves in the N.E. Pacific Ocean. J. A. Scrimger and R. G. Turner. **46:** 122—1969

Patents

Sonar ray plotter. Daniel Barron. **46:** 883—1969
Sonic ray tracer. William R. Moreland and Alonzo W. Phillips. **46:** 883—1969

13.3 Velocity of Sound in Water. Refraction. Doppler Effect

Papers

Development of simple equations for accurate and more realistic calculation of the speed of sound in seawater. C. C. Leroy. **46:** 216—1969
Intensity summation of modes and images in shallow-water sound transmission. R. J. Urick. **46:** 780—1969
Rayleigh and Lamb waves on cylinders. R. E. Bunney, R. R. Goodman, and S. W. Marshall. **46:** 1223—1969
Time-domain analysis of broad-band refraction and diffraction. H. A. Wright, Jr. **46:** 661—1969
Velocity profiles that produce acoustic focal points on an axis of minimum velocity. DeWayne White. **46:** 1318—1969

Letters to the Editor

Comments on two letters by Neubauer on creeping and circumferential waves [J. Acoust. Soc. Amer. **44,** 298(L) (1968); 1150(L) (1968)] R. E. Bunney. **46:** 275—1969
Reply to "Comments on two letters by Neubauer on creeping and circumferential waves" [J. Acoust. Soc. Amer. **46,** 275(L) (1969)] Werner G. Neubauer. **46:** 275—1969

Patents

System for measuring sound velocity in water as a function of depth. John H. Cawley and Daniel Schiff. **46:** 1118—1969

13.4 Reflection. Echoes. Structures for Absorbing Sound in Water

Papers

Acoustic decoupling properties of onionskin paper. R. W. Higgs and L. J. Eriksson. **46:** 211—1969
Analysis of acoustic wave scattering from a rough layer. Kumar Krishen and W. W. Koepsel. **46:** 617—1969
Azimuthal dependence of sound backscattered from the sea surface. Jon Reeves, Yoshiya Igarashi, Lloyd Beck, and R. Stern. **46:** 1284—1969
Intensity fluctuations in reflections from the ocean surface. M. Vertner Brown. **46:** 196—1969
Maximum side-aspect target strength of an individual fish. Richard H. Love. **46:** 746—1969
Reconstruction of objects from their sound-diffraction patterns. M. M. Sondhi. **46:** 1158—1969
Relationships between acoustic backscatter and geological characteristics of the deep ocean floor. R. B. Patterson. **46:** 756—1969

Letters to the Editor

Diffraction of a plane acoustic pulse by a free orthogonal trihedron (three-dimensional corner). Richard P. Shaw and Daniel F. Courtine. **46:** 1382—1969

Abstracts

Analog description and simulation of acoustic target echoes from scattering bodies. K. L. Ettenhofer. **46:** 117—1969
Dependence of temporal and spatial correlation of forward-scattered underwater sound on the surface height correlation function. H. Medwin and C. S. Clay. **46:** 122—1969
Integral equations for exterior scattering that have a unique solution at all frequencies. K. M. Mitzner. **46:** 117—1969

Patents

Underwater sound reflector apparatus. Francis E. Buck and James R. Bellace. **46:** 1431—1969

13.5 Interference. Diffraction

Papers

Vertical coherence of sound transmitted over a twenty-four-mile path. R. J. Urick, T. J. Tulko, and D. D. Abraham. **46:** 1308—1969

Letters to the Editor

Creeping-wave theory and experiment. John V. McNicholas and H. Überall. **46:** 827—1969
Diffraction of a plane acoustic pulse by a free orthogonal trihedron (three-dimensional corner). Richard P. Shaw and Daniel F. Courtine. **46:** 1382—1969

Abstracts

Transmitted waves in sound scattering from liquid cylinders. Donald Brill and H. Überall. **46:** 116—1969

13.6 Scattering. Reverberation in Water

Papers

Analysis of acoustic wave scattering from a rough layer. Kumar Krishen and W. W. Koepsel. **46:** 617—1969
Azimuthal dependence of sound backscattered from the sea surface. Jon Reeves, Yoshiya Igarashi, Lloyd Beck, and R. Stern. **46:** 1284—1969
Maximum side-aspect target strength of an individual fish. Richard H. Love. **46:** 746—1969
Phase and amplitude fluctuations in propagating through a layered ocean. Robert M. Kennedy. **46:** 737—1969
Relationships between acoustic backscatter and geological characteristics of the deep ocean floor. R. B. Patterson. **46:** 756—1969
Scattering by liquid-coated prolate spheroids. C. Yeh. **46:** 797—1969
Volume scattering-strength profiles in the Northeast Pacific Ocean. J. A. Scrimger and R. G. Turner. **46:** 771—1969

Letters to the Editor

Creeping-wave theory and experiment. John V. McNicholas and H. Überall. **46:** 827—1969

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Analog description and simulation of acoustic target echoes from scattering bodies. K. L. Ettenhofer. **46:** 117—1969
Dependence of temporal and spatial correlation of forward-scattered underwater sound on the surface height correlation function. H. Medwin and C. S. Clay. **46:** 122—1969
Effect of shadowing on acoustic scattering from the sea surface. R. R. Gardner. **46:** 122—1969

Near-surface ocean bubble distributions measured *in situ* by acoustic techniques. Herman Medwin. **46:** 122—1969

On the effects of stochastic boundary perturbations on acoustic wave propagation. Dimitri S. Bugnolo. **46:** 122—1969

Scattering of acoustic waves by a rough, pressure-release surface. C. W. Horton, Sr., and D. R. Melton. **46:** 122—1969

Spectra of interacting acoustical waves with a turbulent wake. A. Izzo and M. Yildiz. **46:** 117—1969

Transmitted waves in sound scattering from liquid cylinders. Donald Brill and H. Überall. **46:** 116—1969

Volume scattering of acoustic waves in the N. E. Pacific Ocean. J. A. Scrimger and R. G. Turner. **46:** 122—1969

13.7 **Radiation from Objects Vibrating under Water. Acoustical and Mechanical Impedance. (See also 5.3, 11.5, and 12.3z.)**

Papers

Acoustical field produced by an arbitrary body in good vibration. I. Theory and three-dimensional synthesis. E. Y. T. Kuo. **46:** 623—1969

Generation of subharmonics of order one-half by bubbles in a sound field. Anthony Eller and H. G. Flynn. **46:** 722—1969

New method of evaluating mutual coupling of sources on nonsimple bodies. V. Mangulis. **46:** 753—1969

Rayleigh and Lamb waves on cylinders. R. E. Bunney, R. R. Goodman, and S. W. Marshall. **46:** 1223—1969

Subharmonic and other low-frequency emission from bubbles in sound-irradiated liquids. E. A. Neppiras. **46:** 587—1969

Transmission of acoustic waves through submerged viscoelastic spherical shells. George Workman and Sabih I. Hayek. **46:** 1340—1969

Turbulence-induced plate vibrations: an evaluation of finite- and infinite-plate models. Wayne A. Strawderman. **46:** 1294—1969

Letters to the Editor

Nearfield pressure distributions for a rigid and a flexing piston in an infinite soft baffle. G. F. Kuhn and F. A. Andrews. **46:** 859—1969

Propagation of shear-stress waves in an infinite nonhomogeneous elastic medium with cylindrical cavity. Damoder P. Reddy and Melvin G. Marietta. **46:** 1381—1969

Abstracts

Edge radiation from a semi-infinite fluid-loaded plate. P. Ranganath Nayak. **46:** 117—1969

Integral equations for exterior scattering that have a unique solution at all frequencies. K. M. Mitzner. **46:** 117—1969

Long-wavelength acoustic holography. Thomas S. Graham. **46:** 116—1969

Measurement of the phase of vibrational displacement by a laser interferometer. M. R. Serbyn and F. A. Andrews. **46:** 93—1969

Use of acoustical holography for the imaging of the sources of radiated sound on a complex vibrator. David C. Greene. **46:** 116—1969

13.8 **Sound Generation by Liquid Motion, Bubbles, Turbulence, Splashes. (See also 13.12.)**

Papers

Bubble dynamics in a non-Newtonian fluid subject to periodically varying pressures. K. S. Chan and Wen-Jei Yang. **46:** 205—1969

Effects of noninstantaneous transducer response on the measurement of turbulent pressure. Wayne A. Strawderman. **46:** 1289—1969

Generation of subharmonics of order one-half by bubbles in a sound field. Anthony Eller and H. G. Flynn. **46:** 722—1969

Growth of bubbles by rectified diffusion. Anthony I. Eller. **46:** 1246—1969

High-speed photographic studies of ultrasonically induced cavitation. Hilding G. Olson and Frederick G. Hammitt. **46:** 1272—1969

Physics of flow noise, the. G. P. Haddle and E. J. Skudrzyk. **46:** 130—1969

Subharmonic and other low-frequency emission from bubbles in sound-irradiated liquids. E. A. Neppiras. **46:** 587—1969

Turbulence-induced plate vibrations: an evaluation of finite- and infinite-plate models. Wayne A. Strawderman. **46:** 1294—1969

Abstracts

Motion of underwater one-dimensional gas bubbles. David Epstein and Joseph B. Keller. **46:** 117—1969

Near-surface ocean bubble distributions measured *in situ* by acoustic techniques. Herman Medwin. **46:** 122—1969

Periodic small-scale cavitation process. E. A. Neppiras and E. E. Fill. **46:** 93—1969

Patents

Noise attenuating apparatus for liquid conducting conduits. Bernice L. Jones. **46:** 1119—1969

13.9 **Noise in Water, Ship Noise. Flow Noise, Biological Noises**

Papers

Deep-ocean ambient-noise spectra in the Northwest Atlantic. Anthony J. Perrone. **46:** 762—1969

Turgulence-induced plate vibrations: and evaluation of finite- and infinite-plate models. Wayne A. Strawderman. **46:** 1294—1969

Abstracts

Application of statistical energy analysis to a noise and vibration problem in a small motor vessel. Roger J. Sawley. **46:** 99—1969

Practical engineering approach to surface marine acoustics. Lewis H. Bell. **46:** 99—1969

Patents

Sound emitting fish lure. Roscoe A. Mitchell. **46:** 1431—1969

13.10 **Underwater Macrosonics. Explosions. Distortion. (See also 14.2 and 12.5.)**

Papers

Cavitation due to shock pulses reflected from the sea surface. R. A. Wentzell, H. D. Scott, and R. P. Chapman. **46:** 789—1969

Experiments on the acoustic modulation of large-amplitude waves. T. G. Muir and J. E. Blue. **46:** 227—1969

Signal distortion in a constant gradient medium is continuous and bounded. D. H. Wood. **46:** 795—1969

Spherical model of an acoustical wave generated by rapid laser heating in a liquid. Chia-Lun Hu. **46:** 728—1969

Volume-scattering-strength profiles in the Northeast Pacific Ocean. J. A. Scrimger and R. G. Turner. **46:** 771—1969

Abstracts

Cavitation due to reflected shock pulses. R. A. Wentzell. **46:** 111—1969

Patents

Method of and apparatus for reducing the bubble pulse from underwater explosions and pressure impulses. Charles I. Malme and Bill G. Watters. **46:** 883—1969

13.11 Instruments Relating to Underwater Sound

Letters to the Editor

Application of the fast Fourier transform to linear, distributed system response calculations. Pritchard H. White. **46:** 273—1969

Technical Notes and Research Briefs

Acoustic meter for ocean waves. **46:** 316—1969

Underwater acoustic telemetry. **46:** 317—1969

Patents

Multichannel underwater acoustic telemetering system. Clyde L. Tyndale, Gerald H. Efinger, and Samuel O. Raymond. **46:** 1119—1969

Noise-suppression diving apparatus. Yujiro Yamamoto and Edwin S. Hamberg. **46:** 337—1969

Underwater communication transducers. George J. Sebesta. **46:** 567—1969

13.11n Navigational Instruments Using Underwater Sound. Underwater-Listening and Echo-Ranging Devices. Sonar

Abstracts

Acoustic navigation as related to deep ocean search. C. L. Buchanan. **46:** 77—1969

Acoustic navigation utilizing group phase. Walter H. Caldwell. **46:** 103—1969

Bearing and range estimation with a linear passive sonar array. J. B. Lewis and P. M. Schultheiss. **46:** 103—1969

Bench test apparatus for sonar transducer elements. W. James Trott. **46:** 93—1969

Directivity of underwater horns. A. P. Ripper, R. D. Finch, and D. Muster. **46:** 93—1969

On velocity and gradient hydrophones. Antares Parvulescu. **46:** 92—1969

Vector-impedance plotting under arbitrary drive conditions. Antares Parvulescu and Dana D. Mitchell. **46:** 92—1969

Patents

Beam former. Luther W. Ricketts, Jr., Robert E. Stalcup, and Robert J. Erickson. **46:** 1431—1969

Contrast control circuit for the indication provided by underwater sound apparatus. Hans Drenkelfort and Siegried Thieme. **46:** 1119—1969

Controlled threshold detector for sonar applications. George J. Moss, Jr. **46:** 1431—1969

Depth measuring ultrasonic transceiver. William L. Rollwitz and Harvey S. Benson. **46:** 1431—1969

Echo sounding apparatus. Earl W. Noble. **46:** 1119—1969

Echo sounding apparatus with adjustable sounding direction. Gustav Maass. **46:** 1431—1969

Echo sounding method and apparatus. Hans Bostroem and Friedrich Howey. **46:** 884—1969

Fan beam acoustic Doppler navigation system. Harold K. Farr. **46:** 884—1969

High speed system for processing long range sonar pulses. Jean Bertheas. **46:** 568—1969

Method and apparatus for increasing the angular definition of the direction indication in sonar systems. Werner Schwarz. **46:** 568—1969

Pulse echo recording. Joseph D. Richard. **46:** 567—1969

Signal detection, identification, and communication system providing good noise discrimination. Meredith S. Ulstad and Arthur E. Neuman. **46:** 1119—1969

Signal processor. Andrew P. Cox, Jr., and William L. Price. **46:** 883—1969

Sonar apparatus for measuring underground caverns. Gerald D. Patterson. **46:** 883—1969

Sonar system. Robert A. Rubega and Boyd B. Cary. **46:** 1120—1969

Underwater navigation method and system. Kenneth E. Burg. **46:** 884—1969

13.11t Transducers for Underwater Sound. Transducer Calibration. (See also 5.18.)

Papers

Acoustic decoupling properties of Corprene DC-100. R. W. Higgs and L. J. Eriksson. **46:** 1254—1969

Acoustic decoupling properties of onionskin paper. R. W. Higgs and L. J. Eriksson. **46:** 211—1969

Calibration at high pressure of piezoelectric elements for deep-submergence hydrophones. T. A. Henriquez. **46:** 1251—1969

Effects of noninstantaneous transducer response on the measurement of turbulent pressure. Wayne A. Strawderman. **46:** 1289—1969

Letters to the Editor

On the vibration of a thin piezoelectric disk with an arbitrary impedance on the boundary. Ralph A. Nelson, Jr. and Larry H. Royster. **46:** 828—1969

Abstracts

Acoustic lens studies. H. R. Feldman. **46:** 90—1969

Conventional transducers—material functions. D. Haan. **46:** 90—1969

Development of a computer program directed towards the design of a high-resolution Cassegrainian sonar antenna. Attilla I. Simanyi. **46:** 92—1969

Directivity of underwater horns. A. P. Ripper, R. D. Finch, and D. Muster. **46:** 93—1969

Engineering acoustics workshop: passive acoustic materials for underwater transducer applications. Introduction—objectives. R. W. Higgs. **46:** 90—1969

High-resolution Cassegrain sonar antenna. Harold E. Foster. **46:** 92—1969

Hydrophone calibrator. W. James Trott. **46:** 93—1969

Material selection—acoustic transmission problems. C. Johansen. **46:** 90—1969

Measurement techniques. R. W. Higgs. **46:** 90—1969

Present status in the design of flextensional underwater acoustic transducers. Gerald A. Brigham and Larry H. Royster. **46:** 92—1969

Transducer materials studies. I. D. Groves. **46:** 90—1969

Patents

Deep submergence acoustic transducer array construction. John M. McCool and Shelby F. Sullivan. **46:** 884—1969

Electroacoustic transducer with improved electromagnetic drive. Frank Massa, Jr. **46:** 1120—1969

Line array hydrophone and system. Joseph M. Bringman, James M. Lawther, and Paul M. Kendig. **46:** 568—1969
Marine hydrophone vibration isolation. Billy W. Davis and Roy C. Johnston. **46:** 1120—1969
Multi-frequency phase shifter. James A. Peugh. **46:** 1120—1969
Multimode hydrophone transducer simulator. Roy C. Moore. **46:** 884—1969

13.12 Acoustic Cavitation

Papers

Cavitation due to shock pulses reflected from the sea surface. R. A. Wentzell, H. D. Scott, and R. P. Chapman. **46:** 789—1969
Cyclic Cavitation Process. E. A. Neppiras and E. E. Fill. **46:** 1264—1969
High-speed photographic studies of ultrasonically induced cavitation. Hilding G. Olson and Frederick G. Hammitt. **46:** 1272—1969

Abstracts

Cavitation due to reflected shock pulses. R. A. Wentzell. **46:** 111—1969
Periodic small-scale cavitation process. E. A. Neppiras and E. E. Fill. **46:** 93—1969
Rôle of Impurities in cavitation threshold determination. Robert E. Apfel. **46:** 93—1969
Spectral analysis of cavitation noise in cryogenic liquids. A. Mosse and R. D. Finch. **46:** 93—1969

14 AEROACOUSTICS, MACROSONICS

14.1 General, Unclassified

Book Reviews

Noise and Acoustic Fatigue in Aeronautics. D. J. Mead. (Reviewed by Harvey H. Hubbard.) **46:** 874—1969

14.2 Macrosonic Propagation. Distortion of the Wavefront. Shock Waves. Blast Waves. Supersonic Boom

Papers

Atmospheric correction factor for sonic-boom pressure amplitudes. Allan D. Pierce and Charles L. Thomas. **46:** 1366—1969
Attenuation of guided, weak sawtooth waves. Samuel Temkin. **46:** 267—1969
Ultrasonic radiation field of a focusing spherical source at finite amplitudes. Carl W. Smith and Robert T. Beyer. **46:** 806—1969

Letters to the Editor

Comments on "Propagating and standing sawtooth waves" [Samuel Temkin, J. Acoust. Soc. Amer. **45,** 224–227 (1969)] Donald B. Cruikshank, Jr. **46:** 1389—1969
Reflection of ultrasonic third-harmonic waves in NaCl. C. R. Scorey. **46:** 820—1969
Reply to "Comments on 'Propagating and standing sawtooth waves' " [Donald B. Cruikshank, Jr., J. Acoust. Soc. Amer. **46,** 1389(L) (1969)] Samuel Temkin. **46:** 1390—1969

Abstracts

Acoustic and magnetic ultralow frequencies generated by the *SATURN* F-1 engine. Uri Fehr. **46:** 100—1969
Acoustic shock emission of high-speed nozzles. Abraham C. Peter. **46:** 100—1969
Long-range acoustic signals from the *SATURN I* in flight. U. Fehr and George Kaschak. **46:** 101—1969
Model experiment on variability of sonic-boom signatures. Bruce A. Davy and David T. Blackstock. **46:** 101—1969
Profile of weak shock waves in a shock tube. John H. Magerlein and Wayne M. Wright. **46:** 94—1969
Sonic-boom propagation in a random atmosphere. Allan D. Pierce. **46:** 101—1969
Spectral analysis of cavitation noise in cryogenic liquids. A. Mosse and R. D. Finch. **46:** 93—1969

14.3 Gross Movement of Matter by Sound Waves. Acoustic Streaming

Abstracts

Effect of a transverse resonant acoustic field upon viscous fluid in a cylindrical enclosure. A. E. Hribar and K. R. Purdy. **46:** 100—1969

14.5 Interaction of Sound with Sound

Papers

Experiments on the acoustic modulation of large-amplitude waves. T. G. Muir and J. E. Blue. **46:** 227—1969

14.6 Interaction of Fluid Motion and Sound

Papers

Acoustic rays in two-dimensional rotating flows. Richard F. Salant. **46:** 1153—1969
Symmetrical normal modes in a Rankine vortex. C. Sozou. **46:** 814—1969

Technical Notes and Research Briefs

Electromagnetic-acoustic probe. Leroy U. Rudasill. **46:** 862—1969

Abstracts

Development of a low-noise, low-turbulence free jet wind tunnel. Arnold L. Shulman. **46:** 108—1969
Irreversible statistical mechanics and the structure of anisotropic turbulent stress tensor. M. Yildiz. **46:** 109—1969
Spectra of interacting acoustical waves with a turbulent wake. A Izzo and M. Yildiz. **46:** 117—1969

14.7 Generation of Sound by Fluid Flow

Papers

Direct correlation of fluctuating lift with radiated sound for an airfoil in turbulent flow. P. J. F. Clark and H. S. Ribner. **46:** 802—1969
Measurements on the effect of transducer size on the resolution of boundary-layer pressure fluctuations. F. E. Geib, Jr. **46:** 253—1969
Physics of flow noise, the. G. P. Haddle and E. J. Skudrzyk. **46:** 130—1969
Transmission of noise from a turbulent boundary layer through a flexible plate into a closed cavity. E. H. Dowell. **46:** 238—1969
Turbulent-boundary-layer pressure fluctuations and wavenumber filtering by nonuniform spatial averaging. David M. Chase. **46:** 1350—1969

Abstracts

Correlation of fluctuating forces on enclosed flow spoilers with sound radiation. Hanno H. Heller and Sheila E. Widnall. **46:** 100—1969
Development of a low-noise, low-turbulence free jet wind tunnel. Arnold L. Shulman. **46:** 108—1969

Direct correlation of fluctuating lift with radiated sound for an airfoil in turbulent flow. P. J. F. Clark and H. S. Ribner. **46**: 100—1969
Irreversible statistical mechanics and the structure of anisotropic turbulent stress tensor. M. Yildiz. **46**: 109—1969
Potential of high-intensity noise testing. C. T. Morrow. **46**: 83—1969

14.8 Aerothermoacoustics

Papers

Helmholtz oscillations in pulsating-combustion chambers. P. E. Moseley and J. W. Porter. **46**: 262—1969

15 ACOUSTIC SIGNAL PROCESSING

15.1 General, Unclassified

Papers

Reconstruction of objects from their sound-diffraction patterns. M. M. Sondhi. **46**: 1158—1969

Abstracts

Acoustic navigation utilizing group phase. Walter H. Caldwell. **46**: 103—1969

15.2 Statistical Theory of Signals

Papers

System for algorithmic construction of signal waveforms with optimal autocovariance properties. Norman W. Lord. **46**: 840—1969

Abstracts

Application of statistical energy analysis to a noise and vibration problem in a small motor vessel. Roger J. Sawley. **46**: 99—1969
Predetection integration applied to the detection of passive acoustic signals. Daniel Schutzer. **46**: 103—1969
Representation and analysis of time-limited data samples using a complex exponential algorithm. Azizul H. Quazi and Frank R. Spitznogle. **46**: 102—1969

15.3 Space-Time Processing Methods. Automatic Recognition

Papers

Effects of signal quantization on the performance of multichannel processing systems. A. M. Vural **46**: 293—1969
Estimation of periodic signals in noise. Thomas G. Kincaid and Henry J. Scudder III. **46**: 1397—1969
Optimum passive bearing estimation in a spatially incoherent noise environment. Verne H. MacDonald and Peter M. Schultheiss. **46**: 37—1969
Use of dispersive delay lines for signal processing in underwater acoustics. P. Tournois and J. Bertheas. **46**: 517—1969

Letters to the Editor

Digital beamforming in the frequency domain. Philip Rudnick. **46**: 1089—1969

Abstracts

Adaptive unsupervised detection with finite memory. Ronald L. Spooner. **46**: 103—1969
Bearing and range estimation with a linear passive sonar array. J. B. Lewis and P. M. Schultheiss. **46**: 103—1969
Two-dimensional sampling in acoustics. I. D. Tripathi. **46**: 102—1969

Patents

Signal processor for multipath signals. James L. Flanagan. **46**: 75—1969

15.4 Displays and Sensory Pattern Recognition. Learning Machines

Abstracts

Adaptive unsupervised detection with finite memory. Ronald L. Spooner. **46**: 103—1969

Patents

Device for reproducing sound from a card shaped record. Marvin Jacobs. **46**: 568—1969
Electroacoustic language teaching device. Dorothea M. Weitzner. **46**: 884—1969

15.5 Instrumentation

Papers

Use of dispersive delay lines for signal processing in underwater acoustics. P. Tournois and J. Bertheas. **46**: 517—1969

Letters to the Editor

Use of acoustical holography for the imaging of sources of radiated acoustic energy. David C. Greene. **46**: 44—1969

Abstracts

Long-wavelength acoustic holography. Thomas S. Graham. **46**: 116—1969
Reconstruction of shapes of objects from their sound-diffraction patterns. M. M. Sondhi. **46**: 116—1969
True rms—the digital approach. J. A. Lapointe. **46**: 119—1969
Use of acoustical holography for the imaging of the sources of radiated sound on a complex vibrator. David C. Greene. **46**: 116—1969
Versatile high-speed one-third-octave band analyzer. W. R. Kundert and G. R. Partridge. **46**: 119—1969

16 BIOACOUSTICS

16.3 Acoustic Measurement Methods in Biological Systems and Media

Papers

Radiation pressure from breathing and heartbeat. Thomas G. Barnes. **46**: 471—1969

Letters to the Editor

Near- and farfields in a marine environment. William Siler. **46**: 483—1969

16.4 Mechanisms of Action of Acoustics Energy on Biological Systems. Physical Processes. Sites of Action

Papers

Bubble dynamics in a non-Newtonian fluid subject to periodically varying pressures. K. S. Chan and Wen-Jei Yang. **46:** 205—1969

Laser-induced acoustic transients in the mammalian eye. Stephen F. Cleary and Philip E. Hamrick. **46:** 1037—1969

16.5 **Use of Acoustic Energy (with or without Other Forms of Energy) in Studies of Structure and Function of Biological Systems**

Papers

Cochlear hair-cell damage in guinea pigs after exposure to impulse noise. Lynn B. Poche, Jr., Charles W. Stockwell, and Harlow W. Ades. **46:** 947—1969

Stimulus level of dichotically presented tones and cat superior olive *S*-segment cell discharge. Chiyeko Tsuchitani and James C. Boudreau. **46:** 979—1969

Letters to the Editor

Effect of random noise on plant growth. C. B. Woodlief, L. H. Royster and B. K. Huang. **46:** 481—1969

Patents

Transducer for artificial heart. Edmund H. Carnevale, Lawrence C. Lynnworth and Ronald N. Lawson. **46:** 75—1969

16.6 **Sound Generation and Detection by Animals**

Papers

Acoustico-lateralis system of fishes: tests of pressure and particle-velocity sensitivity in grunts, *Haemulon sciurus* and *H. parrai*. Phyllis H. Cahn, William Siler, and Jerome Wodinsky. **46:** 1572—1969

Radiation pressure from breathing and heartbeat. Thomas G. Barnes. **46:** 471—1969

Letters to the Editor

Acoustic radiation patterns for the echolocating bats *Chilonycteris rubiginosa* and *Eptesicus fuscus*. James A. Simmons. **46:** 1054—1969

Airborne measurements of the acoustic characteristics of a sperm whale. J. L. Dunn. **46:** 1052—1969

Near- and farfields in a marine environment. William Siler. **46:** 483—1969

Temporal summation of acoustic signals by the chinchilla. Donald Henderson. **46:** 474—1969

Technical Notes and Research Briefs

To call a fish. **46:** 864—1969

Abstracts

Acoustic orientation by the rabbit pinna and external auditory meatus. J. M. Fattu. **46:** 124—1969

Automatic audiometer coupled to a data-acquisition system for animal use. C. Wilpizeski, F. Taylor, L. Kay, and W. Ramshaw. **46:** 94—1969

Cochlear-nucleus-evoked responses in the rat. David Crowley. **46:** 112—1969

Control of behavior by the location of an auditory stimulus. M. D. Beecher and J. M. Harrison. **46:** 124—1969

Cortical responses of awake cat to narrow-band FM noise. Edmund M. Glaser. **46:** 113—1969

Detection of increments in Gaussian noise by rhesus monkeys. Ben M. Clopton. **46:** 120—1969

Development of auditory function in the Mongolian gerbil. Alfred Finck, Carson D. Schneck, and Albert F. Hartman, Jr. **46:** 107—1969

Hearing in the bullhead catfish (*ictalurus nebulosis*). Burton A. Weiss, George M. Hartig, and William F. Strother. **46:** 114—1969

Physiological and histopathological comparison of deaf and normal-hearing white cats. Karl W. Hattler and Fumiro Suga. **46:** 107—1969

Principal component analysis of evoked cortical potentials from awake cat—narrow-band noise masking. Charles M. Suter and Edmund M. Glaser. **46:** 95—1969

Radiation patterns for bat sonar cries. James A. Simmons. **46:** 114—1969

Response characteristics of kangaroo rat cochlear nucleus neurons. George Moushegian and Allen L. Rupert. **46:** 113—1969

Response of first-order vestibular afferents to controlled angular accelerations. Jay M. Goldberg and César Fernández. **46:** 105—1969

Single auditory units recorded in the medial nucleus of the trapezoid body (MNTB) of anesthetized cats. J. J. Guinan, S. S. Guinan, and B. E. Norris. **46:** 113—1969

Stimuli level of dichotically presented tones and cat superior olive *S*-segment cell discharge. James C. Boudreau and Chiyeko Tsuchitani. **46:** 113—1969

Vocal-tract limitations on the vowel repertoires of rhesus monkey and other nonhuman primates. Philip Lieberman, Dennis L. Klatt, and William A. Wilson. **46:** 97—1969

Book Reviews

Bird Song; Acoustics and Physiology. Crawford H. Greenewalt. (Reviewed by Hubert Frings.) **46:** 546—1969

16.7 **Role of Acoustic Energy in the Integrated Behavior of Animals**

Papers

Acoustico-lateralis system of fishes: tests of pressure and particle-velocity sensitivity in grunts, *Haemulon sciurus* and *H. parrai*. Phyllis H. Cahn, William Siler, and Jerome Wodinsky. **46:** 1572—1969

Technical Notes and Research Briefs

To call a fish. **46:** 864—1969

Abstracts

Radiation patterns for bat sonar cries. James A. Simmons. **46:** 114—1969

16.8 **Medical Diagnosis with Acoustics**

Patents

Blood pressure cuff transducer. David D. Cohen and Armand F. Du Fresne. **46:** 885—1969

Ultrasonic transducer system. John J. Flaherty and Peter J. Rosauer. **46:** 885—1969

Vibratory catheterization apparatus and method of using. Charles A. Boyd. **46:** 568—1969

16.9 **Medical Use of Ultrasonics for Tissue Modification (Permanent and Temporary)**

Papers

Laser-induced acoustic transients in the mammalian eye. Stephen F. Cleary and Philip E. Hamrick. **46:** 1037—1969